DEC 15 1884
3040
CITY OF WASHINGTON

The American Architect and Building News

A WEEKLY JOURNAL OF CONSTRUCTIVE AND DECORATIVE ART.

VOL. XVI.—No. 468.] SATURDAY, DECEMBER 13, 1884. [PRICE, 15 CENTS.

BARTLETT, HAYWARD & CO.

(Established, 1836.)

ARCHITECTURAL IRON-WORK,

HOT-WATER HEATING.

Plans and Specifications and the Superintendence of the Heating and Ventilation of Public Buildings a specialty.

BALTIMORE, MD.

W. & J. SLOANE,

ARTISTIC CARPETINGS,

—AND—

UPHOLSTERY GOODS,

ANCIENT AND MODERN ORIENTAL RUGS.

BROADWAY, EIGHTEENTH AND NINETEENTH STS.,

NEW YORK.

[ESTABLISHED 1866.]

NOVELTIES IN CARPETS,

STANDARD, FOREIGN AND DOMESTIC,

RUGS, MATS and WINDOW-SHADES.

Communications Solicited.

H. A. HARTLEY & CO., BOSTON, MASS.

95 TO 105 WASHINGTON STREET.

OXLEY, GIDDINGS & ENOS,

Designers and Manufacturers of

GAS-FIXTURES,

ART METAL-WORK,

CLOCKS AND BRONZES,

Special designs and estimates furnished upon application.

Architects' patronage most respectfully solicited.

224-230 CANAL STREET, 120-126 WALKER STREET, } NEW YORK.

T. ASPINWALL & SON,

TILES of all descriptions for Floors, Walls, Hearths, Fireplaces and Decoration generally.

MANTELS, GRATES, AND OPEN FIREPLACES.

BRASS FENDERS, ANDIRONS, ETC.

Sole Agents for, and only direct importers of MINTON'S and the CAMPBELL TILE CO.'S TILES.

75 & 77 W. 23d St., (Masonic Temple) NEW YORK.

J. W. TAYLOR,

CHICAGO. 146 LA SALLE ST.

NEW ARCHITECTURAL PHOTOGRAPHIC SERIES

And Club rates on American and Foreign Periodicals.

Send $1.50 for my

LARGE PHOTOGRAPHIC GROUP

of the recent Convention of Architects held at Chicago.

Circulars on application.

OHIO BUILDING STONE CO.

QUARRYMEN AND DEALERS IN

BUFF AND BLUE OHIO SANDSTONE.

OFFICES:

127 SUPERIOR STREET, CLEVELAND, O.

BRANCH OFFICES:

247 BROADWAY, NEW YORK, N. Y.

350 FIFTH AVENUE, CHICAGO, ILL.

49 FIFTH AVENUE, PITTSBURGH, PA.

SPANISH TILES "NOLLA'S."

The best colors and hardness ever produced in Flooring Tiles. *Original Designs for every Work.*

FERNANDO MIRANDA, Sole Agent in U. S.

92 Liberty Street, New York, N. Y.

CHARLES R. YANDELL & CO.,

MANUFACTURERS OF

ILLUMINATED LEATHERS

AND HAND-PAINTED WALL-PAPERS,

Select Textile Fabrics, Choice Furniture,

Dealers in Antique Spanish Leathers, Bric-a-brac, etc.

DECORATIVE ARTISTS.

No. 6 EAST EIGHTEENTH ST., NEW YORK.

Near Fifth Avenue.

Established 1817.

MITCHELL, VANCE & CO.

Designers and Manufacturers of

GAS FIXTURES,

ORNAMENTAL METAL WORK, CLOCKS AND BRONZES.

ARCHITECTS' ORDERS SOLICITED.

Special designs submitted on application.

WAREROOMS, 836 and 838 BROADWAY,

MANUFACTORY, 24th and 25th STS. and 10th AVENUE,

NEW YORK.

AMERICAN ENCAUSTIC TILE.

Acknowledged by experts to be

THE BEST IN THE WORLD.

Manufactured by the

AMERICAN ENCAUSTIC TILING CO. (Limited.)

OFFICE & SALESROOM, 116 WEST 23D ST., N. Y.

Designs and Estimates for Public Buildings, Halls, Churches, Vestibules, and for External Decoration, Bath-room, Stove, and Furniture Decorations.

GLAZED AND ENAMELLED TILES

FOR MANTELS, HEARTHS, WAINSCOTING, ETC.

JAMES P. WOOD & CO.

JAMES P. WOOD. JOSEPH WOOD.

STEAM-HEATING, VENTILATING, AND COOKING APPARATUS, ETC.

39 SOUTH FOURTH STREET, PHILADELPHIA, PA.

SEYSSEL ROCK ASPHALT.

FOR SIDEWALKS, FLOORS, CELLARS, ROOFS, ETC.

BITUMEN DAMP COURSE.

DAMP RESISTING SOLUTION.

ACTINOLITE ROOFS,

29 Waverley Place, NEW YORK. } E. H. WOOTTON N. Y. Mastic Works. { Arcade Bldg, R'ms 14, 16 & 17, CHICAGO.

MINTON'S TILES.

PLAIN AND ENCAUSTIC,

FOR PUBLIC BUILDINGS AND DWELLINGS,

As laid by us in

THE CAPITOLS AT WASHINGTON & ALBANY,

And in numerous Churches, Banks, and Dwellings in every part of the country.

Glazed and Enamelled Tiles for Mantels, Hearths, Wainscoting, etc., and for Exterior Decoration.

MILLER & COATES,

279 PEARL STREET, NEW YORK.

FLYNT BUILDING AND CONSTRUCTION CO., Palmer, Mass.

CONTRACTING.

Contracts made for furnishing all material and labor necessary to build complete

MILLS, HOTELS, CHURCHES,

AND BUSINESS BLOCKS.

Also, for the construction of Railroads, Dams and Bridges.

We make Mill-Work a Specialty.

Can show some of the best Mill-Work in New England. Can give the best of references, and should be pleased to correspond with parties in any locality.

ROBERT C. FISHER,

Successor to FISHER & BIRD,

MARBLE AND GRANITE WORKS.

97, 99, 101 and 103 EAST HOUSTON STREET.

Established 1830. NEW YORK.

THE UNITED STATES ENCAUSTIC TILE CO., Indianapolis, Ind.

PLAIN, GEOMETRICAL & ENCAUSTIC TILES, FOR FLOORS

Public Buildings and Private Residences.

HIGH ART MAJOLICA TILES for Mantel Facings, Friezes, Furniture, etc.

GLAZED AND ENAMELLED TILES for Hearths, Stoves, Wainscoting, etc.

Designs and Estimates furnished upon application.

New Pattern Book and Price List just issued.

RENDLE'S

HORTICULTURAL AND SKYLIGHT WORKS.

SKYLIGHTS, CONSERVATORIES, PLANT-HOUSES, GRAPERIES, WINTER-GARDENS, ETC., Erected and Glazed, on

RENDLE'S PATENT "ACME" SYSTEM.

For Illustrated Catalogues, Estimates, etc., address,

ARTHUR E. RENDLE,

UNITED BANK BUILDING, BROADWAY & WALL ST.

NEW YORK.

WHITTIER MACHINE CO.

Manufacturers of Steam and Hydraulic

ELEVATORS,

STEAM ENGINES, BOILERS, AND MACHINERY.

1176 TREMONT STREET, BOSTON.

CHAS. WHITTIER, *Pres't.* A. C. WHITTIER, *Treas.*

L. S. GRAVES & SON,

PASSENGER AND FREIGHT

ELEVATORS.

NOISELESS, SAFE AND DURABLE

CENTRE STREET, ROCHESTER, NEW YORK.

NEW YORK OFFICE, 46 COURTLAND STREET.

STOKES & PARRISH,

30th & CHESTNUT STS., PHILADELPHIA, PA.

Hydraulic and Steam-Power

ELEVATORS.

SAFETY, SPEED, AND ECONOMY.

All kinds of Hoisting Machinery a specialty.

NEW YORK OFFICE, - - 95 & 97 LIBERTY STREET.

CRANE'S

VICTORIOUS HYDRAULIC AND HIGH SPEED STEAM

ELEVATORS.

NEW YORK OFFICE, 92 & 94 LIBERTY ST.

BOSTON OFFICE, ROOM 83 MASON BUILDING.

CHICAGO WORKS, 10 N. JEFFERSON ST.

OTIS

PASSENGER AND FREIGHT

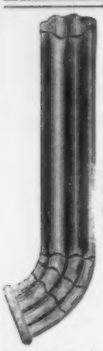
ELEVATORS,

A SPECIALTY FOR A QUARTER OF A CENTURY.

For Hotels, Office-Buildings, Stores, Warehouses Factories, Mines, Blast-Furnaces, etc.

OTIS BROTHERS & CO.,

NEW YORK, BOSTON, AND PHILADELPHIA.



POPULAR BECAUSE **RELIABLE.**

AUSTIN'S PATENT

Expanding Conductor,

OR LEADER.

The ORIGINAL and only LEGITIMATE EXPANDING CONDUCTOR in the market, has been used for years and THOROUGHLY TESTED in all the PRINCIPAL CITIES and TOWNS in the UNITED STATES and is SPECIFIED by ARCHITECTS generally THROUGHOUT THE COUNTRY.

Austin, Obdyke & Co., Philadelphia,

SOLE MANUFACTURERS.

PRINCIPAL AGENTS.

S. D. Hicks & Son,	Boston.	B. G. Carpenter & Co.,	Wilkesbarre, Penn.
M. Halliday,	New York City.	The Miller Iron Co.,	Providence, R. I.
Bruce, Cook & Co.,	" "	Sanford Bros.,	Newark, N. J.
Sidney Shepard & Co.,	Buffalo, N. Y.	Knisely & Miller,	Chicago.
Wasson & Martin,	Albany, N. Y.	J. C. McFarland & Co.,	Chicago, Ill.
Hoy & Co.,	Albany, N. Y.	Wm. Fuller & Co.,	Baltimore, Md.
Reardon, Ennis & Co.,	Troy, N. Y.	W. R. Allen & Co.,	San Francisco, Cal.
Troy Stamping Works,	Troy, N. Y.	Bakewell & Mullins,	Salem, Ohio.
Chas. Millar & Son,	Utica, N. Y.	Biersack & Neidermeyer,	Milwaukee, Wis.
W. H. Scott,	Portland. Me.	The Blodgett & Clapp Co.	Hartford, Conn.
J. W. Jordan,	Worcester, Mass.		

CARD.

By decisions of the U. S. Circuit Courts the *Exclusive Right* to manufacture *Expanding Conductors of any and all designs*, was secured to WILLIAM AUSTIN, and AUSTIN, OBDYKE & Co. are the only parties authorised to manufacture under Austin's Letters Patent, — all others will be considered and treated as

INFRINGERS.

THE ONLY REAL

Expanding Conductor.

Guaranteed no Infringement.

The IRWIN & REBER

PATENT

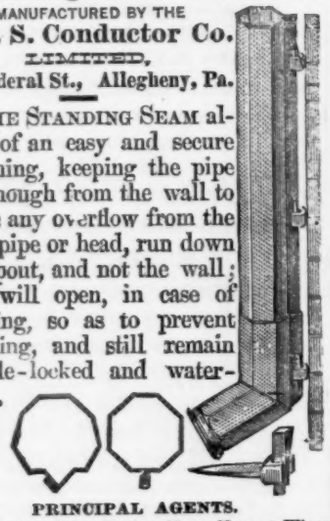
Expanding Water Conductor,

MANUFACTURED BY THE

S. S. S. Conductor Co.

LIMITED,

47 Federal St., Allegheny, Pa.



THE STANDING SEAM allows of an easy and secure fastening, keeping the pipe far enough from the wall to make any overflow from the eave pipe or head, run down the spout, and not the wall; and will open, in case of freezing, so as to prevent bursting, and still remain double-locked and water-tight.

PRINCIPAL AGENTS.

E. B. Badger & Son, Boston, Mass.; Noyes & Wines, New York; J. S. Thorn, Philadelphia; John G. Hetzell, Baltimore; R. P. Gormully, Chicago; F. Schmitt & Sons, Milwaukee; Shackelton Bros., Cleveland; G. H. Peters & Son, Buffalo, N. Y.; James Ackroyd, Albany, N. Y.; Witt & Brown, Cincinnati; Hull & Cozzens Man'f'g Co., St Louis, A. K. Sweet, Kansas City Mo., and many others.

ALFRED BOOTE,

11 East 19th Street, New York.

TILES

Of all descriptions, from

MINTON'S, MAW'S, and BOOTE & CO'S.

MOSAICS in Stock and made to order from any design. Large Stock of

Mantels, Grates, & Open Fireplaces.

Special designs made to suit customers free of charge. Experienced men kept to set Mantels, Grates, and Tiles.

MINTON, HOLLINS & CO.,

STOKE-UPON-TRENT.

The original and existing Manufactory of

MINTON'S

Plain, Encaustic, Glazed, Enamelled, Majolica, Printed and Art-Painted Tiles, for Floors, Walls, Hearths, Mantels, Furniture, &c. Illustrated sheets of newest designs just issued.

SHARPLESS & WATTS, Agents,

No. 1325 MARKET STREET, PHILADELPHIA, PA.

BEST CONDUCTOR OF ALL.

Ritchie's Patent Spiral Lock-Seam Pipe,

NO SOLDERED JOINTS.

BOSTON SPIRAL-TUBE WORKS, LAMB & RITCHIE, Proprietors.

See our Advertisement last week.

A. L. FAUCHERE & CO.

Office and Warerooms,

433 AND 435 SEVENTH AVENUE, next to south-east corner Thirty-fourth Street,

Importers, Manufacturers, and Dealers in all kinds of

FOREIGN AND DOMESTIC

MARBLE FOR INTERIOR WORK.

Estimates furnished on application.

TWO MONTHS FREE.

New Subscribers who pay their Subscription ($6.00 for the regular or $7.00 for the gelatine edition) for 1885, in full, before December 25, 1884, will receive, gratis, the nine issues for Nov. and Dec. 1884.

Stained Glass.

W. J. McPHERSON,

PLAIN, DECORATIVE, DOMESTIC AND ECCLESIASTICAL

Stained & Leaded Glass Manufacturer.

440, 442 & 444 TREMONT STREET.

N. Y. Office: 26 Warren St., LINSLEY PIKE & CO.

EST. LONDON, ENG., 1854.

Works, 20 W. 4th St., N. Y.

Beautiful & Lasting for ORNAMENTING WINDOWS, DOORS, TRANSOMS, &c.

Stained Glass SUBSTITUTE

AT SMALL COST. Send for Illustrated Catalogue and Prices. Samples by mail 25 cents.

W. C. YOUNG SOLE AGENT. 731 ARCH ST. PHILADELPHIA, PA.

AGENTS WANTED EVERYWHERE.

Stained Glass.

REDDING, BAIRD & CO.,

SUCCESSORS TO COOK, REDDING & CO.,

Manufacturers of

STAINED GLASS

IN ALL ITS VARIETIES. IMPORTED

ROLLED CATHEDRAL GLASS

of our own importation furnished in any quantity and cut to size.

146 FRANKLIN ST., BOSTON, MASS.

SAMUEL WEST,

471 Tremont St., Boston,

Artist in Stained Glass

FOR ALL GRADES OF ORNAMENTATION.

Memorial Windows a specialty.

Awards of the highest merit for thirty years past.

KELLEY & COMPANY,

ECCLESIASTICAL AND DOMESTIC

STAINED GLASS,

27 Pearl Street, Boston, Mass.

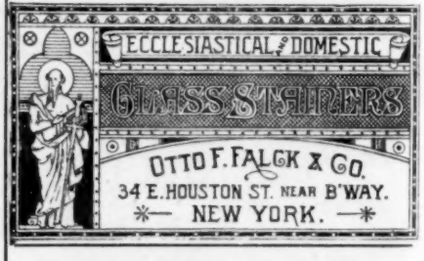
METAL -WORKERS in BRASS, BRONZE, & STERLING SILVER.

ARTISTIC STAINED GLASS

* * * *

NEW DESIGNS. Send for Hand-Book, to

J. & R. LAMB, 59 CARMINE ST., NEW YORK.



Donald MacDonald, Agt.,

Glass Stainer and Decorator.

Studio and Works, 400 Northampton St.

Forty-Eight.

GEO. R. CLARKE & CO.,

Art Furnishing Rooms,

48 Boylston Street - - Boston, Mass.

Stained Glass Designers & Workers.

Tiles for Floors, Walls, Hearths, Facings, etc. Tiles designed and painted to order. Marquetry Floors. Furniture Designers and Manufacturers. Designs and estimates furnished on application. Glass works on the premises.

J. G. & J. F. LOW, Chelsea, Mass.

LOW'S ART TILES.

REPRESENTED BY

New York, Caryl Coleman, No. 9 East 17th St.
Chicago, Henry Dibblee, 266 and 268 Wabash Ave.
Boston, C. A. Wellington & Co., 44 Boylston St.
Cincinnati, C. S. Rankin & Co., West Pearl St.
Cleveland, A. S. Herenden Furniture Co., Bank St.
Detroit, F. H. Probasco & Co., 201 Woodward Ave.
Washington, Hayward & Hutchinson, Ninth St.
San Francisco, W. W. Montague & Co., Market St.
Minneapolis, Sullivan & Farnham, Third St., So.
Omaha, Milton Rogers & Sons, Farnam & 14th Sts.
Louisville, J. V. Escott & Sons, Fourth Ave.
St. Louis, Seidel & Schoenle, So. Fifth St.
Milwaukee, Mathews Bros.
Phila., W. H. Harrison & Brother, 1435 Chestnut St.
Pittsburgh, L. H. Smith & Co., 49 Sixth St.
Syracuse, Hawley, Whitaker & Co., 83 S. Salina St.
Montreal, P. Q., J Wright & Co., 9 Beaver Hall St.

Stained Glass.

The La Farge Decorative Art Co.

33 East 17th Street, New York.

Contracts taken large or small for

MEMORIAL STAINED GLASS WINDOWS,

Stained Glass of Every Description,

Mosaic, Repoussée, Wood Carvings, Embroideries, and Hangings, for either

Ecclesiastical or Domestic Purposes,

and every kind of Interior Decoration for Public or Private Buildings.

Examples of Mr. La Farge's work may be seen at:—
Trinity Church, Boston. St. Thomas's Church, N. Y. Memorial Hall, Harvard College. The Brick Church, N. Y. Garfield Memorial, at Williams College.
And the following private residences:—
W. H. Vanderbilt, Cornelius Vanderbilt, N. Y. Cyrus W. Field. S. J. Tilden, N. Y. F. L. Ames, Boston.

Friederichs & Staffin,

Plain, Decorative, Domestic, and Ecclesiastical

Stained and Leaded Glass

MANUFACTURERS,

For Churches, Dwellings, etc.,

107 & 109 Gratiot Ave., DETROIT, MICH.

Decorators.

ALFRED GODWIN & CO.

STAINED GLASS

For Churches, Dwellings, &c.
Send for illustrated Catalogue.

1201 Market Street, Philadelphia.

CLEVELAND

Stained Glass Works.

GEO. DRAKE, Proprietor,

99 and 101 Public Square, Cleveland, Ohio.

RUTZLER & BLAKE,

HIGH AND LOW PRESSURE

Steam Heating Apparatus,

170 & 172 Centre St., New York.

E. RUTZLER, Established 1871. G. W. BLAKE, Established 1854.

J. PASQUALI & C. AESCHLIMANN,

Manufacturers of Roman and Venetian

Marble Mosaics,

For Floors, Walls, Ceilings, Mantels, Hearths, Decorations, etc. **231 East 28th St.**, Bet. 2d & 3d Aves. **N. Y.** Prices very moderate. *References:* Principal Architects and decorators of N. Y. *Note.*—A party advertising to have superintended all work of this nature in N. Y. has never superintended any work there.

C. H. GEORGE, Importer.

PAPER HANGINGS.

Exclusive Upholstery Goods and Decorations.

152 5th Avenue, New York.

MASKINS

FINE DRAPERIES

RARE CURTAIN FABRICS

IN CENTRAL MUSIC HALL.

CHICAGO.

W. J. McPHERSON,

Established A. D., 1845,

Painter, Glazier, Designer, and Ecclesiastical

DECORATOR,

440, 442 and 444 Tremont Street.

FRANK HILL SMITH,

171 1-2 TREMONT STREET,

BOSTON.....MASS.

MODELLING, CARVING & DESIGNING

For Interior and Exterior Decoration.
Bronze, Wood, Plaster, Stone and Marble.
J. HOLMES, Hotel Chapman Boston.

OTTO GAERTNER,

Fresco Painter, Interior Decorator.

47 LAFAYETTE PLACE, NEW YORK.

Established A. D. 1848.

L. HABERSTROH & SON,

Mural Decorators,

PAINTING IN ALL ITS BRANCHES.

28 School Street, Rooms 10 & 11, **Boston, Mass.**

20 Bellevue Ave., Near Kay St., **NEWPORT, R. I.**

WALKER & THOMPSON,

Decorative Art Leather and

LEATHER PAPER.

Embossed, Illuminated and Plain Leather-Work of all kinds, for Furniture and Interior Decorations.

No. 4 BOND STREET, NEW YORK.

WILLIAM WRIGHT,

Interior Decorator,

STAINED GLASS.

Designer and Manufacturer of Fine Furniture, Rich Paper Hangings.

34 Fort Street, West, - - DETROIT, MICH.

H. EDGAR HARTWELL

28 West 23d St., N. Y. City.

ART DESIGNERS and MANUFACTURERS.

CHOICE FURNITURE.
UNIQUE FRESCOES.
MOSAIC GLASS.
INTERIOR WOOD-WORK

MANTELS AND GRATES.

Fine Brass Grates, Fenders, Andirons, Fire-Sets, etc.

General Agent LOW'S ART TILES.

FLOOR AND ORNAMENTAL TILE,

For Halls, Vestibules, Conservatories, Hotels, Banks, etc. Tile Facings and Hearths.

ORNAMENTAL METAL WORK.

Stable Fittings, Weather-Vanes, Crestings, Fountains, Vases, Drinking-Fountains, Chairs, Settees.

HENRY DIBBLEE, 266 & 268 Wabash Ave., Chicago.

ARTISTIC TILES

FOR WALLS, FIRE-PLACES AND FLOORS

OF PUBLIC BUILDINGS AND PRIVATE RESIDENCES. Manufactured by

The International Tile Co., (Limited.)

New York Office and Show Rooms: 8 East 17th Sreet.

Works, Third St., between Hoyt and Bond Sts.

FROST & ADAMS,

37 CORNHILL, BOSTON,

Draughting Instruments,

— AND —

SUPPLIES FOR ARCHITECTS, ENGINEERS AND DRAUGHTSMEN.

— AGENTS FOR —

Abbott's Practical Ellipsograph and Levy's Blue-Process Paper.

Copies taken by the Levy Blue Copying Process.

An Examination of our Catalogues is solicited.

UNMOUNTED

PHOTOGRAPHS

— OF —

Architectural Subjects.

Also, WORKS OF OLD AND MODERN MASTERS IN PAINTING, SCULPTURE, ETC.

Send 6-cent stamp for Catalogue of 5,000 subjects.

SOULE PHOTOGRAPH CO.,

Mention this paper. **338 Washington Street, BOSTON, Mass.**

Potter's Mortar Material.

For laying Front Brick, Chimneys and Fireplaces **it has no Equal.**

FURNISHED IN RED, BLACK, OR GRAY. Send for Circulars.

AMERICAN SOAPSTONE FINISH CO. Providence, R. I.

P. O. BOX 35.

Annunciators, Electric.

EDWARDS & COMPANY,
(PATENT)
Electric Bells and Annunciators,
AUTOMATIC BURGLAR ALARMS, FIRE ALARMS, Etc.
Estimates for Electric Bells, Annunciators, Speaking-Tubes, Letter-Boxes, Door-Openers for Apartment-Houses, etc.
GAS-LIGHTING BY ELECTRICITY.
Factory: 4th Ave. and 144th St. Office: 41 Beaver St. N. Y.

Architectural Iron-Work.

T. H. BROOKS,
ARCHITECTURAL IRON-WORK,
ORNAMENTAL DIRECT RADIATORS,
IMPROVED INDIRECT RADIATORS
Cleveland, Ohio.

Architectural Iron and Jail Works.

Architectural Iron and Jail Works.
IRON STORE-FRONTS, COLUMNS AND GIRDERS,
Iron Railings and Verandas,
BANK VAULTS, FIRE-PROOF DOORS & SHUTTERS,
JAIL CELLS AND CAGES,
and all kinds of iron-work required in the erection of buildings
M. CLEMENTS,
Catalogues furnished on application. Cincinnati, Ohio

Architectural Sheet-Metal Work.

G. L. Swett & Company,
Manuf'rs of Plain and Ornamental
SHEET-METAL WORK FOR BUILDINGS.
Copper Gutters, Cornices, Windows, Finials,
Galvanized-Iron Ventilators, Roofing, etc.
IMPROVED METALLIC SKYLIGHTS.
N. B.— We warrant our Skylights to be Fire and Storm-Proof. They are the best made and are in use by the Heliotype Printing Co., Notman Photographic Co., U. S. Sub-Treasury and Post-Office, and nearly all the principal buildings in Boston.
295 Harrison Ave., cor. Motte St., Boston.

Cement, Portland.

BROOKS, SHOOBRIDGE & CO.
Best English Portland Cement.
Works: Grays, Essex, England.
New York Office: No. 7 Bowling Green.
Also Roman Cements, Fire-Brick, Felt, etc.

Decorative Glass by Sand Blast.

JOHN MATTHEWS,
First Avenue, Twenty-sixth and Twenty-seventh Streets, NEW YORK.
Sole licensee in New York of the TILGHMAN SAND BLAST
Decorative Glass from Late Designs Executed by Sand Blast or Embossing Processes in a Superior Manner.
SHEET AND PLATE GLASS GROUND TO ORDER
Send for Illustrated Catalogue or Estimates

Elevators and Hoisting Machinery.

STEPHEN A. MORSE. C. M. WILLIAMS. EDWIN F. MORSE.
CLEM & MORSE,
Manufacturers and Builders of,
Hydraulic, Steam, Belt and Hand-Power Passenger and Freight Elevators, Dumb-Waiters, Automatic Hatch-Doors, etc.
Sole owners of the right to apply the Heebner Patent Governor to Elevators and Hoisting Machinery. *Send for Illustrated Circular.*
Nos. 411 and 413 Cherry Street, Philadelphia, Pa.
Branch Office, 108 Liberty St., New York.

Fireplaces, Ash-Traps, and Grates.

EUREKA GRATE WORKS,
Manufacturers of
PATENT FIREPLACE LININGS,
Patent Self-closing Ash-Traps,
Grates of all kinds,
Iron Mantels, and Importers of Tiles.
CINCINNATI, OHIO.

Inlaid Floors and Borders, Ceilings, Wainscotings, Mantels, Sideboards, Bookcases, Counters, etc.

W. E. WHEELER,
Successor to R. M. Hubbard & Co.
Established 1874.
Manufacturer of Hubbard's Patent
Inlaid Floors and Border.
The most beautiful and durable floor made. Hundreds of them in the finest houses in the country. Illustrated Catalogue sent free. Fine dwelling, office, and hotel interiors and Art Furniture from special designs. Drawings and estimates furnished on application.
84 to 96 Erie Street, Toledo, Ohio.

Iron Structures.

BOSTON BRIDGE WORKS,
D. H. ANDREWS, Engineer.
Office, ... 13 Pemberton Square Boston.
WROUGHT IRON TRUSSES,
BOX AND PLATE GIRDERS & BEAMS
For sustaining roofs, floors, walls, and other loads of all kinds, designed and built. Our long experience embraces the designing and construction of many wrought-iron structures, large and small, a conspicuous example of which may be examined in the wrought-iron trusses for roofs and floors of the Exhibition Building of the N. E. Manufacturers' and Mechanics' Institute, Boston.

Peerless Colors for Mortar.

PEERLESS COLORS FOR MORTAR,
BLACK, BROWN, BUFF, RED.
Brightest and Most Durable Colors Manufactured.
SEND FOR CIRCULAR.
SAMUEL H. FRENCH & CO.,
York Avenue and Callowhill Street, Philadelphia, Pa.

THE TAHANTO MANUFACTURING COMPANY,
Manufacturers of Decorative Articles in Metal.

Friezes, Panels, Mantel-Facings, Bas-Reliefs, &c., from Original Designs or those furnished, for the interior Decoration of Dwelling-Houses, Public Buildings, Hotels, Elevator-Cabs, Parlor and Passenger Cars, Steamers, &c., in Copper, Brass, Bronze, and Silver, reproducing with exact fidelity natural objects or other models.

Special attention is called to the reproductions from natural leaves and flowers in the panels and tiles for furniture and interiors.

☞ Correspondence solicited and estimates furnished on application.

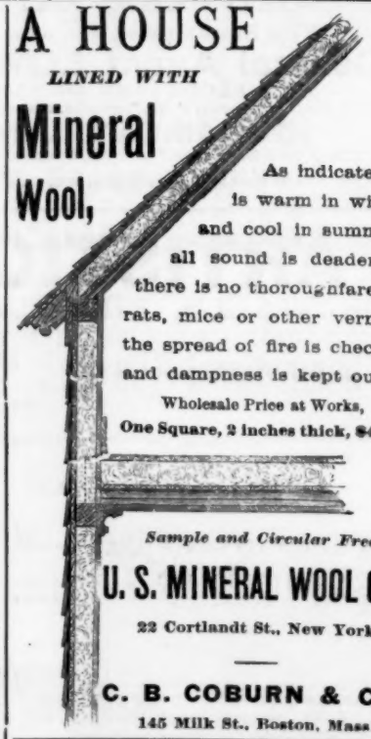
42 Battery march Street, Boston.

E. V. R. THAYER, President. S. L. HOLDREGE, Treasurer

ROSENBERG'S
ARCHITECTURAL FINISH, AND OIL SHELLAC.
For Sale in Boston by WADSWORTH, HOWLAND & CO.
STANDARD VARNISH WORKS, D. ROSENBERG & SONS, Man'f's., 734-740 E 14th St., N. Y.

JANENTZKY & WEBER,
Draughtsmen's Supplies.
Blue-Print Papers. Drawing Papers, Mathematical Instruments, Drawing Inks, Architectural and Fresco Designs.
Artists Materials Generally.
1125 CHESTNUT STREET, PHILADELPHIA, PA.

A HOUSE
LINED WITH
Mineral Wool,



As indicated, is warm in winter and cool in summer; all sound is deadened; there is no thoroughfare for rats, mice or other vermin; the spread of fire is checked and dampness is kept out.
Wholesale Price at Works,
One Square, 2 inches thick, $4.00.

Sample and Circular Free.
U. S. MINERAL WOOL CO.,
22 Cortlandt St., New York.

C. B. COBURN & CO.,
145 Milk St., Boston, Mass.

MY 100-PAGE ILLUSTRATED
CATALOGUE of BOOKS
On Architecture, Building, Carpentry, Drawing, Painting, Decoration, and Ornament, Drawing Instruments, Builders' Level and Architects' Materials,
Sent on receipt of three two-cent stamps.
WM. T. COMSTOCK, 6 Astor Place New York

Elevators.

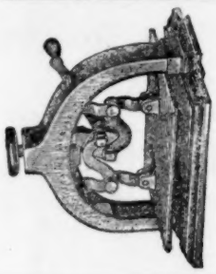
Z. WILE,
PASSENGER AND FREIGHT ELEVATORS,
Hand-Hoists, etc., of the latest improved inventions now manufactured. Invalid Elevators a specialty.
Office, 191 Tremont Street, Boston.

LOUISVILLE
MACHINE AND ELEVATOR WORKS,
SULZER & VOGT, Proprietors,
Manufacturers and Dealers in all kinds of
ELEVATORS,
Nos. 717 to 731 East Main St.,
Between Clay and Shelby, LOUISVILLE, KY.

HYDRAULIC STEAM AND BELT ELEVATORS.
Hand-Hoists operated with ropes or cranks. Automatic Hatch-doors. Governors, and Safety-catches.
GEO. C. HOWARD.
Works, 1763 Barker Street, Philadelphia, Pa
New York Office, 12 Cortlandt Street.

Established 1835.
E. E. McCALVEY,
Manufacturer and Builder of the latest improved
Steam, Belt, and Hand-Power
Passenger & Freight Elevators.
Automatic Hatch-Doors. Also, Invalid Safety-Elevators, and Dumb Waiters for Hotels and Residences. Send for Illustrated Circular.
602 Cherry St., Philadelphia, Pa.

HOISTING
Machinery Exclusively.
STEAM, HYDRAULIC
AND
HAND POWER
ELEVATORS.
Send for Catalogues and Prices.
J. W. REEDY,
530 to 536 Canal St., New York. 93 to 97 Illinois St., Chicago.


Best and cheapest Copying-Press made.
GEO. A. OHL & CO.,
Newark, N. J.

WATER COLORS
G. Wagner's Celebrated Specialty, for Architects and Designers. Send for Price-List to
J. MARSCHING & CO., 27 Park Place, N. Y.

Parisian Art and Artists.
By HENRY BACON. 1 vol. 8vo, $3. Profusely illustrated.
"Very delightful reading" the N. Y. *Mail and Express* calls it.
"A very bright book."—*Boston Advertiser.*
"Very pleasant reading."—*Phila. Press.*
JAMES R. OSGOOD, & CO. 211 Tremont St., BOSTON.

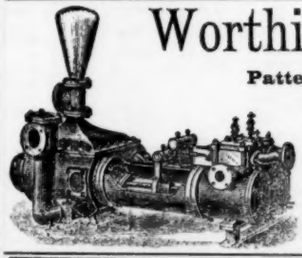
"Picturesque Sketches."
PRICE, $1.50.
PUBLISHED BY
JAMES R. OSGOOD & COMPANY,
211 TREMONT STREET, BOSTON, MASS.

WIRE LATHING,
ESPECIALLY ADAPTED TO
Public Buildings, Private Residences, Mills, Warehouses, Stores, and all Mercantile Structures.
IT IS POSITIVELY FIRE-PROOF.
WIRE LATHING possesses the following qualities:
IT IS NOT COSTLY.
IT IS EASILY AND CHEAPLY APPLIED.
PLASTERING ON THE WIRE LATH WILL NOT CRACK
THE LATH WILL NOT CORRODE.
The plastering, when applied, clinches on both sides of the wire, forming a double surface.
THE WIRE LATHING is extensively used by the United States Government in its Custom House Court House, and Post Office Buildings.
It is indorsed by the leading Insurance Companies, who have applied it to their own fine edifices.
Full information given on application to the
CLINTON WIRE CLOTH CO., Clinton, Mass.
68 Beekman Street, New York. **148 Lake Street, Chicago.**

SHINGLE STAINS
Much Preferred to
LINSEED OIL AND CHEAPER. ALSO:
S. CABOT, Jr. 70 KILBY ST.
BOSTON.
Send for circulars.

ATLANTIC
White Lead and Linseed Oil.
ROBERT COLGATE & CO.,
GENERAL AGENTS,
287 Pearl Street, New York.

BURDITT & WILLIAMS,
20 Dock Square,
BOSTON.
Unequalled Stock of Choice Hardware. Specifications figured and orders filled in all markets.

Worthington Steam Pumps.

Patterns specially adapted to
HOUSE TANK SERVICE
And Hydraulic Elevators.
ABSOLUTELY NOISELESS.
HENRY R. WORTHINGTON - New York.
BOSTON, CHICAGO, ST. LOUIS, CINCINNATI, CLEVELAND, SAN FRANCISCO, PITTSBURGH.

HANOVER FIRE INSURANCE CO.

Cash Capital	$1,000,000.00
Reserve for Re-insurance	625,741.16
Reserve for all other Liabilities,	96,655.57
Net Surplus	832,744.56
Total Assets, January 1, 1883	2,565,141.39

BUILDING MATERIALS.
Reported for the American Architect and Building News.

BRICK.—₱ M.	New York. (*Wholesale Prices.*)	Boston. (*Prices to Builders and Contractors.*)	Chicago. (*Prices to Builders and Contractors.*)	Philadelphia. (*Prices to Builders and Contractors.*)
Common: *Cargo afloat.*				
Pale	$2 50 @ $3 50	Eastern	Building Brick	Hard
Jersey	4 25 @ 4 75	7 50 @ 8 00	8 00 @ 8 50	7 50 @ 8 50
		Bay State Hard		Salmon
Up River	5 00 @ 5 50	9 00		5 00 @ 6 00
Haverstraw Bay	5 50 @ 6 00	Domestic Com.	Indiana Pressed	Stretchers
" 1st	6 00 @ 6 50	8 00 @ 9 00	16 00 @ 28 00	11 00 @ 12 50
		Domestic Face	St. Louis Fronts	Pressed
Fronts:		19 00 @ 20 00	25 00 @ 30 00	20 00 @ 23 00
Croton, Brown	13 @ 14 00	Philadelphia		
" dark	14 @ 15 00	40 00 @ 45 00		
" red	14 @ 15 00	Phila. mould		
Chicago pressed		50 00 @ 80 00	22 00 @ 35 00	
Chicago Moulded			65 00 @ 350 00	
Baltimore	37 @ 41 00		@ 55 00	
Glens Falls—white	30 @ 35 00	Glens Falls		
Philadelphia	@ 27 00	25 00 @ 28 00	42 00 @	
Trenton	@ 27 00		40 00 @	
Milwaukee		Glens Falls	25 00 @	
Moulded:		Mould.	60 00 @ 100 00	
Clark's Glens Falls—Red	25 00 @ 27 00	30 00 @ 35 00	30 @	
" —White	30 00 @ 35 00	35 00 @ 40 00	35 @	
White " Mold,	45 00 @ 60 00	45 00 @ 60 00	55 00 @ 65 00	
Enamelled: *Imp.*				
Enamelled (edge.)	85 00 @ 100 00	@	@ 100 00	
Enamelled (edge and end)	90 00 @ 115 00	@	@ 120 00	Dom. @ 65
				@ 85
CEMENT, LIME, etc.—(₱ *cask.*)				
Rosendale Cement	80 @ 1 00	@ 1 50	*Not Sold.*	1 50 @ 1 75
Utica, Akron, Buffalo, Louisville, Milwaukee	*Not sold.*	*Not sold.*	1 00 @ 1 25	*Not sold.*
Portland (English)	2 60 @ 3 10	@ 3 20	3 00 @ 3 25	3 25 @ 3 50
" (Saylor's Am.)	2 05 @ 2 40	2 50 @ 3 00	2 75 @ 3 00	2 50 @ 3 00
" (Dyckerhoff)	2 75 @ 3 15	3 00 @ 3 50	3 25 @ 3 75	3 00 @ 3 25
" (Lafarge)	3 50 @ 4 50	*Not sold.*	3 75 @ 4 25	4 50 @
" (Star)	2 70 @ 3 00	*Not sold.*	*Not sold.*	*Not sold.*
K. B. & S. (Eng.) Portland	2 85 @ 3 10		3 35 @ 3 50	3 00 @ 3 25
Burham " "	2 60 @ 2 80		3 15 @ 3 35	2 75 @ 3 00
Vorwohler	2 65 @ 3 25		3 00 @ 3 25	
German (Fewer)	2 50 @ 2 70	3 15 @ 3 35	3 15 @ 3 35	
" (Alsen)	2 50 @ 2 80	3 00 @ 3 50	3 15 @ 3 35	2 90 @ 3 25
Selenitic		1 65	*Not sold.*	
Hydraulic Lime of Teil	@ 5 00		*Not sold.*	
Roman	2 75 @ 3 00	@ 3 20	2 75 @ 3 25	3 50 @ 3 75
Keene's coarse	5 00 @ 6 00	@ 7 50	8 00 @ 9 00	6 50 @ 7 00
" fine	9 25 @ 10 25	@ 11 50	12 00 @ 13 00	11 50 @ 12 00
Lime:				
Chicago Lime in bulk			65 @ 75	White Mash
Wisconsin "			80 @ 90	1 25 @ 150
Rockland and Rockport, (Com.)	@ 1 00	@ 1 10	*Not sold.*	1 00 @ 1 00
Rockland and Rockport, finish	@ 1 20	@ 1 15	*Not sold.*	
State, com. cargo rates (nom.)	75 @ 80	*Not sold.*	*Not sold.*	*Not sold.*
State, finishing "	95 @ 1 10	*Not sold.*	*Not sold.*	*Not sold.*
Plaster of Paris (calcined.)	1 30 @ 1 35	1 70 @ 1 90	@ 1 75	2 00 @ 2 25
" (casting)	1 50 @ 1 65	@ 2 25	@ 2 00	2 25 @ 2 50
Hair (Cattle) ₱ *bush.*	21 @ 23	@ 30	30 @ 35	20 @ 25
" (Goat)	30 @ 35	@ 30	35 @ 40	28 @ 33
Sand, ₱ *load*	1 00 @ 1 25	@ 1 50	100 @ 1 25	@ 1 50
STONE. (₱ *cubic foot, rough.*)				
Granite: (*Maine*)		@ 60		75 @ 2 00
Limestone:				
Bedford	@ 1 00	95 @ 1 00	80 @	3 75 @
Joliet	@		35 @ 55	
Lemont	@		35 @ 60	
Serpentine	@		80 @ 90	75 @ 1 25

(*Continued on page vi.*

10

For a Sash of 250 Lbs.

"MORTON'S METAL"

(Registered Trade-mark, May 1st, 1883.)

Cable and Champion Sash-Chains

and Patented Attachments.

The most **RELIABLE** and **CHEAPEST** article in the market for suspending

Window-Sashes.

HAS GREAT TENSILE STRENGTH,

Can be easily applied to any window, and gives SATISFACTION wherever used. Samples sent to any Architect free on application. Now in use in all the leading cities throughout the United States.

MANUFACTURED ONLY BY

THOMAS MORTON,

65 ELIZABETH ST., NEW YORK.

BUILDING MATERIALS.

	New York. (Wholesale Prices.)	Boston. (Prices to Builders and Contractors.)	Chicago. (Prices to Builders and Contractors.)	Philadelphia (Prices to Builders and Contractors.)
Foundation:				
Dimension	@@	5 00 ℔ ton	20 @ 28	30 @ 5 00
Block	@@	4 60 ℔ perch	8 50 ℔ cord.	50 @ 6 00
Rubble	@@	1 25 @ 1 50	8 50 @	
Bluestone: (℔ *sq. ft.*)				
Sidewalk	30 @ 5 00	40 @ 1 75	75 @ 1 00	70 @ 90
Planed	50 @ 6 00	75	50 @ 1 00	1 10 @ 1 25
Sandstone,				
Longmeadow		75 @ 85		
Brown (Connecticut)	1 00 @	1 25 @ 1 45	1 50 ℔ cub.ft.	1 35 @ 2 00
Amherst	1 00 @@	90 @ 1 00	55 @ 65	
Berea	75 @@ 1 00	80 @ 90	45 @ 55	90 @ 1 10
Berlin	75 @ 1 00	80 @ 90	55 @ 65	
Bay of Fundy	@ 1 00	*Not sold*	*Not sold.*	
Belleville	80 @ 1 25	1 25 @ 1 35	"	
New Brunswick	@@ 1 00	90 @ 1 00	"	
Caen	@@	@ 2 00	"	
Marble (℔ *cu. ft.*)				
Lee, Mass	@	1 75 @ 2 50	*Not sold.*	2 00 @ 2 50
Rutland, white	@@	@ 3 00	3 50 @ 5 00	2 25 @ 2 50
Sutherland Falls	1 25 @ 1 75	@ 2 00	3 50 @ 5 00	2 50 @ 3 00
Glens Falls, black	@@	2 00 @ 3 00	*Not sold.*	4 00 @ 4 50
Italian, blue-veined	@@	50 @ 60	@ 4 40	—— @ ——
" Sienna	@@	3 00 @ 3 50	*Not sold.*	3 25 @ 6 50
Tennessee, red	@@	1 25 @ 2 50	@ 4 00	2 00 @ 3 00
" Knoxville	@@	85 @ 90	@ 4 00	@ 1 50
Pennsylvania, blue	@@		*Not sold.*	2 23 @ 2 50
Vermont, white	@@	1 50 @ 2 00	3 50 @ 5 00	
Slate: Roofing (℔ *square*)	7 00 @ 8 00	4 50 @ 7 00	6 25 @ 8 10	6 25 @ 7 00
" green	7 00 @@ 8 50	5 50 @ 6 50	@ 8 60	@ 7 00
" purple	@@ 15 00	13 00 @ 14 00	—— @ 16 00	@ 12 00
" red	—— @@ ——	Brownville, Me.	7 20 @ 7 60	@ 4 50
" black, Lehigh	—— @ ——	6 50 @ 9 00	7 30 @ 8 00	@ 4 25
" " Chapmans	5 50 @ 8 00	5 50 @ 8 00	6 00 @ 8 50	5 50 @ 8 00
" Unfading Black, Monson, Me.	@		*Not sold.*	@ 15 00
Tiles, Am. ℔ M.				
LUMBER.—℔ M. (*Ordinary dimensions.*)				
Boards:				
Pine, 1st quality, clear	65 00 @ 75 00	50 00 @ 53 00	44 00 @ 49 00	50 00 @ 52 00
" 2d quality	55 00 @@ 60 00	42 00 @ 44 00	40 00 @ 46 00	42 00 @ 47 50
" 3d quality	18 00 @@ 22 00	35 00 @ 38 00	37 00 @ 44 00	22 00 @ 25 00
Spruce	@@ 25 00	11 00 @ 12 50	*Not sold.*	
Hemlock	@@. 17 18	11 00 @ 12 50	@ 10 00	11 50 @ 15 00
Yellow pine	20 @@ 40	30 00 @ 33 00	@ 28 00	16 00 @ 18 50
Cypress	@	32 00 @ 35 00	@	@
Clapboards:				
Pine	@	33 00 @ 55 00	14 00 @ 22 00	—@—
Spruce	@	23 00 @ 30 00	*Not sold.*	—@—
Framing Timber:				
Pine			13 00 @ 15 50	25 00 @ 35 00
Spruce	14 00 @ 16 00	13 50 @ 14 50	*Not sold.*	18 50 @ 20 00
Hemlock	12 00 @ 15 00	@	13 00 @ 19 00	12 00 @ 13 00
Yellow pine	18 00 @ 25 00	21 00 @ 25 00		18 00 @ 22 00
Laths:				
Pine	@	2 25 @ 2 35	2 25 @	—@—
Spruce	2 40 @ 2 50	2 15 @ 2 25	*Not sold.*	2 35 @ 2 40
Shingles:				
Pine, shaved ℔ M.	5 00 @ 6 00	@	*Not sold.*	
Pine, sawed "	4 00 @ 5 00	@ 4 50	2 25 @ 2 60	
Spruce, sawed "	1 50 @ 2 00	@ 1 50	*Not sold.*	
Redwood ℔ 125	1 40 @ 1 60	3 75 @ 4 50	5 50 @ 8 00	30" $10 @ 28
Cedar, split ℔ M.	@	@	*Not sold.*	24" 8 @ 21
Cedar, sawed "	@	2 00 @ 3 50	@ 2 30	20" 5 50 @ 14
Cypress. Split....7 x 24. "	18 00 @ 20 00	5 50 @ 6 00	4 00 @ 4 50	13 00 @ 20 00
Miscellaneous:				
Piles ℔ ft.	3½ @ 4½	Piles 6c. ℔ ft.	*Not sold.*	
Fence pickets, Spruce	8 00 @ 10 00	10 00 @ 18 00	Pine, 8 @ 12	12 00 @ 14 00
Cedar posts, 9 ft. (sq. posts.)	@	25 @ 35	9 00 @ 21 00	70 @ 1 25
Chestnut "	@	25 @ 35	*Not sold.*	28 @ 36
Finishing Woods: ℔ M. (*First Quality, Kiln-dried.*)				
Ash	@ 55 00	38 00 @ 48 00	35 00 @ 40 00	
Cherry	80 00 @ 120 00	60 00 @ 90 00	75 00 @ 85 00	55 00 @ 65 00
Chestnut	@ 55 00	38 00 @ 50 00	45 00 @ 50 00	60 00 @ 80 00
Butternut	40 00 @ 60 00	60 00 @ 70 00	50 00 @ 60 00	55 00 @ 65 00
Mahogany, Baywood	@ 180 00	100 00 @ 150 00	150 00 @ 180 00	100 00 @
" St. Domingo	@ 350 00	180 00 @ 250 00	250 00 @ 300 00	
Maple	45 00 @ 50 00	45 00 @ 65 00	30 00 @ 35 00	30 00 @ 50 00
Oak, red	@ 70 00	@ 50 00	35 00 @ 40 00	35 00 @ 45 00
" white	@ 70 00	@ 55 00	35 00 @ 40 00	55 00 @ 65 00
" quartered	@ 90 00	65 00 @ 70 00	45 00 @ 50 00	70 00 @ 80 00
Sycamore quartered		@ 65 00	45 00 @ 50 00	
Pine, clear	65 00 @ 70 00	30 00 @ 65 00	45 00 @ 50 00	65 00 @ 90 00
Redwood	60 00 @ 70 00	60 00 @ 70 00	60 00 @ 70 00	100 00 @
Rosewood ℔ lb	6		@ 7	
Walnut, black	125 00 @ 150 00	85 00 @ 100 00	80 00 @ 100 00	160 00 @ 200 00
Whitewood	45 00 @ 50 00	38 00 @ 45 00	30 00 @ 35 00	20 00 @ 30 00
Yellow pine ℔ M.	@ 45 00	40 00 @ 45 00	30 00 @ 35 00	30 00 @ 35 00
Gumwood, best red			30 00 @ 35 00	
PAINTS. (*In oil,* ℔ *lb.*)				
White lead, Am.	5½ @ 6	5½ @ 6	5½ @ 5½	4 @ 5½
" Zinc, "	5 @ 8½	5 @ 8	7 @ 11	4 @ 6
Red, Am.,	6 @ 6½	6 @ 6½	5½ @ 6	
" Venetian	6 @ 10½	7 @ 12	1½ @ 2½	7 @ 10
" Vermilion	65 @ 70	65 @ 70 dry	50 @ 60	Am. 14 @ 22
Red Indian, Eng.	12 @ 20	12 @ 20	12 @ 20	12 @ 20
Yellow Ochre	6 @ 15	7 @ 12	3 @ 15	7 @ 9
" Chrome	12 @ 20	18 @ 25	12 @ 25	12 @ 25
Green (chrome)	8 @ 13	8 @ 20	8 @ 20	9 @ 15
Green, Paris,	25 @ 40	25 @ 40	16 @ 35	16 @ 22
Black, lamp,	15 @ 25	15 @ 25	8 @ 30	8 @ 12
Blue, ultramarine	12 @ 18	18 @ 30	10 @ 35	11 @ 35
Oil, linseed, (raw) (℔ gal.)	53 @ 54	53 @ 58	48 @ 49	52 @ 55
" " boiled (℔ gal.)	56 @ 57	56 @ 61	51 @ 53	57 @ 59
Turpentine (℔ gal.)	33½ @ 34	36 @ 43	32 @ 34	45
Varnish, coach (℔ gal.)	@	1 50 @ 6 00	1 25 @ 2 00	1 75 @ 5 25
Shellac (℔ gal.)	@	2 50 @ 3 00	3 25 @ 4 00	1 10 @ 1 75
Putty	2 @ 3	2 @ 4	02 @ 03	2 @ 2½
Whiting (℔ dry.)	50 @ 90	1 @ 1½	1 @ 2	1 @ 1½
Paris white, (Eng.,) (℔ dry.)	2 @ 3	2 @ 3	2 @ 2½	1½ @ 1½
Litharge, Am. (℔ dry.)	5½ @ 5½	6½ @ 7	6½ @ 10	6½ @ 7½
Sienna, (burnt) (℔ dry.)	12 @ 17½	14 @ 20	4 @ 16	9 @ 14
Umber, " (℔ dry.)	11 @ 16½	14 @ 20	@ 10	9 @ 14

(*Continued on page* vii.)

FOR HEAVY SASH

USE

RAYMOND'S

Compressed Lead Sash Weights.

With Wrought and Malleable-Iron fastenings.

Twice the heft of iron. Occupying only half the space.

Prices no higher than the ordinary cast lead-weights.

Freight allowed to any part of the country.

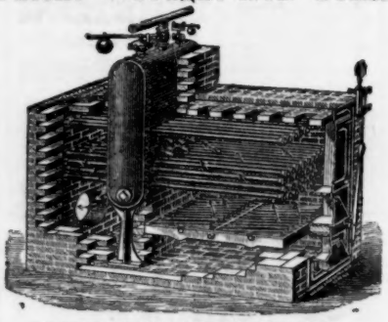
Send for Circular.

J. N. RAYMOND,

55 & 57 West Lake St., Chicago, Ill.

THE HOLLAND

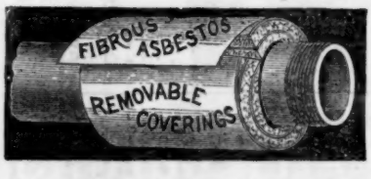
Patent Wrought-Iron Boiler



FOR STEAM HEATING.

HOLLAND & THOMPSON, - - Troy, N. Y.

PIPE-COVERING.



This covering is made entirely of Asbestos, and can not be affected injuriously by heat or dampness, nor can it be made a harbor for vermin.

Asbestos Building-Felt, Fire-Proof Cements, &c.

THE CHALMERS-SPENCE CO.,

419-421 E. 8th Street, - - NEW YORK.

SHIELDS & BROWN,

78 & 80 Lake Street, - Chicago, Ill.

Manufacturers and Sole Proprietors of

BRADLEY'S

FOR BOILERS AND STEAM PIPES.

Reduces Condensation of Steam.

FOR GAS AND WATER PIPES.

Prevents Sweating and Freezing.

The best Non-Conductor of Heat and Cold in the World.

Send for illustrated descriptive Circular, and name this paper.

Established 1827.

W. JACKSON, & SON,

Manufacturers and Importers of

Grates, Open Fireplaces,

Fenders, Fire Irons, etc.

1166 Broadway, Bet. 27th & 28th Sts.

246 Front Street, Near Peck Slip, **New York.**

Heating and Ventilation.

Fire ON THE Hearth

OPEN STOVE VENTILATING CO. PURE AIR HEALTH FOUR HEAT FIRE ON THE HEARTH

In various forms, viz: — **Air-Warming Grates, Fireplace Heaters, School-Room Heaters, Stoves, Double Heaters,** Each combining the ventilation of an open fire with the power and economy of a warm air furnace.

"Palace King Furnaces."

OPEN STOVE VENTILATING CO., 78 Beekman St. New York.

The GOODWIN GAS STOVE & METER CO.,
MANUFACTURERS OF
The Sun Dial Gas Cooking and Heating Stoves.

The most economical in use. Over 50 different kinds. Suitable for Families, Hotels, Restaurants and Public Institutions. Laundry, Hatters' and Tailors' Heaters. Hot-Plates, Warming-Closets for Pantries. Hot-Water Generators, etc., etc.

1012-1016 Filbert Street, Philadelphia.

142 Chambers Street, New York.
126 Dearborn Street, Chicago.
Waldo Bros., Agts., 88 Water St., Boston, Mass.

WARM-AIR
REGISTERS.
THE TUTTLE & BAILEY M'F'G CO., 83 Beekman St., New York. 64 Union St., Boston.

Unparalleled Success
The New AMERICAN Automatic
Steam Heater
FOR DWELLINGS, PUBLIC BUILDINGS, RAILWAY STATIONS, OFFICES, &c.
Low Pressure, Self Regulating, Economical, Cheap, Durable.
UNIFORM HEAT NO GAS DUST, OR SMOKE NO OBJECTIONS
Send for Illustrated Catalogue
MANUFACTURED BY
10 BARCLAY ST. NEW YORK
Newell Universal Mill Co.

The Temporary Binder

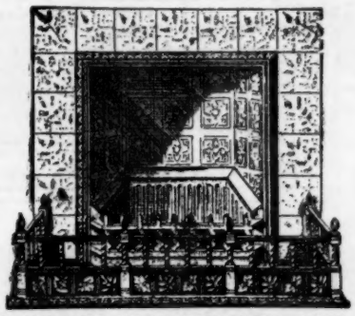
Provided by us will keep your copies of the *American Architect* in PERFECTLY uninjured condition.

PHILADELPHIA GRATE WORKS.

THOMAS S. DIXON & SONS,
MANUFACTURERS OF

FINE **GRATES**

Furnaces, Ranges.



OPEN **Fire-Places**

Gas-Log Fires.

IMPORTERS OF ENGLISH AND FRENCH FIRE-PLACE FITTINGS.
1330 Chestnut Street, - - Philadelphia.

DETROIT STEAM RADIATOR CO.'S Patent Cast Iron Steam Radiator.

This radiator is constructed upon the principle *of a coil.* A diaphragm separates one leg of the loop from the other, so that steam entering passes up one leg to the top of the loop, down the other leg to the opposite side of the diaphragm, thence into the next loop, and so on through the Radiator, securing a PERFECT CIRCULATION and an IMMEDIATE heating of the whole Radiator. It is adapted to **High** or **Low** pressure, and surpasses all others in the **perfection** of its operation, beauty of design, and simplicity of construction. The loops or sections are made complete and independent of each other, and each loop is screwed to the adjacent loop by a double-thick wrought-iron nipple, thus forming a perfect joint not affected by contraction or expansion.

No packing is used, and there are but **two joints** in each four feet of heating surface (36-inch size), while the ordinary pipe radiator has **eight joints.** It has the largest radiating surface of any in the market to space occupied.

As each loop or section is an exact duplicate of the other, **the size of a radiator** may be **increased** or **diminished** if desired, and in case of damage by frost or otherwise, it can be easily repaired **without removal** from the building. This is true of no other Radiator and is very important. Being constructed without the cumbersome base so objectionable in all other radiators, there is no accumulation of **dirt and dust,** and the most perfect radiation is secured.

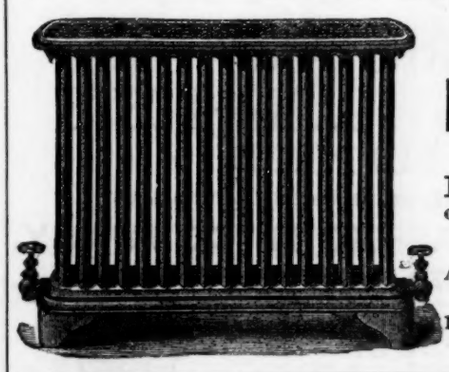
Liberal discount to the trade. Send for catalogue and price list. Address,

DETROIT STEAM RADIATOR CO., Office, 129 Griswold St., Detroit, Mich.

JOHN DAVIS & CO., Contractors for
STEAM HEATING & VENTILATING

For Stores, Hospitals, Factories and all Public Buildings. Estimates and specifications furnished for direct and indirect heat. Boilers of superior quality and design; also Steam Pumps, Iron Pipe and Fittings. Call or address

71 to 75 Michigan Street, CHICAGO.



THE H. B. SMITH COMPANY,
MANUFACTURERS OF
Heating Apparatus,
For Public Buildings and Private Dwellings.
REED'S RADIATORS,
Gold's Patent Sectional Boilers.
Gold's Pin Indirect Radiators.
Mill's Sectional Safety Boilers.
A. MERCER, ENGINEER.
Office and Warerooms,
137 Centre Street, NEW YORK.
Foundry, Westfield, Mass.

STEAM WARMING.

BATES & JOHNSON,

114 LEONARD STREET, - - - - - NEW YORK.
59 West Water Street, Syracuse. 310 Broadway, Albany.

House Warming a Specialty. **Estimates Furnished on Application.**

W. H. Harrison & Bro.
Manufacturers.
PLAIN AND ARTISTIC
GRATES
AND FIREPLACES
A SPECIALTY.
Also **Furnaces and Ranges.**
Send for Illustrated Catalogue. 1435 Chestnut St. Philadelphia.

SLATE MANTELS

Of the latest and most beautiful designs, and all other Slate and Soapstone work on hand or made to order. JOSEPH S. MILLER & BROTHER, 1210 Ridge Avenue, Philadelphia, Pa. Successor to Wilson & Miller. Send for Illustrated Price-List.

GLOBE VENTILATORS & CHIMNEY CAPS.

Public and Private Buildings and Railroad Cars Perfectly Ventilated.

SMOKY CHIMNEYS CURED!

STATIONARY, ORNAMENTAL, NOISELESS, STORM-PROOF, DURABLE, SIMPLE, and CHEAP.

Send for Price-List. Working Model sent on receipt of 20 cents, to pay postage. Manufactured and for sale by

GLOBE VENTILATOR CO.

Office: 203 River Street, Troy, N. Y.

Wholesale Agents for Albany and vicinity, Hoy & Co., Nos. 25 and 27 Green St., Albany, N.Y.
Wholesale Agents for New York City and vicinity, George H. Mosman, 28 Cliff St., New York City.
Wholesale Agents for Philadelphia, Pa., and vicinity, Merchant & Co., 835 Arch St., Phila.
Wholesale Agents for Nebraska, Idaho, Montana, and Wyoming, Milton Rogers & Son, Omaha, Neb.
Wholesale Agents for Milwaukee & Vicinity, Rundle, Spence & Co., 89 West Water St., Milwaukee, Wis.
Wholesale Agents for Boston, Mass., and vicinity, Chas. M. Bromwich, 613 Broadway, South Boston.
Wholesale Agents for Chicago, Ill., Sargent, Greenleaf & Brooks, 45 and 45 Franklin St.
Wholesale Agents for Louisville, Ky., George L. Smith, 167 First St., Louisville, Ky.
Wholesale Agents for Canada, Hughes & Stephenson, 745 Craig St., Montreal, Can.
Wholesale Agents for St. Louis and vicinity, N. O. Nelson & Co., Eighth and St. Charles Sts.
Wholesale Agents for Ogden, Utah, and vicinity, D. D. Jones, Main St., Ogden, Utah.
Wholesale Agents for Rochester and vicinity, Trotter, Geddes & Co., 29 Exchange and 18 Aqueduct Sts., Rochester, N. Y.
Wholesale Agents for Minnesota, Wilson & Rogers, 24 East Third St., St. Paul, Minn. Wholesale Agents for Cincinnati and vicinity, H. McCollum & Co., 262 Race St., Cincinnati, O.
Wholesale Agents for Baltimore, Md., Lyon, Conklin & Co., 27 and 29 Light Street, Baltimore, Md.
Wholesale Agents for Detroit, Mich., and vicinity, Dry-Dock Sheet-Metal Works, cor. Orleans and Franklin Sts., Detroit, Mich.

Stable Fittings a specialty.

Send for Catalogue.

Brass Fenders, Andirons, Fire-Sets, Coal-Hods, Frames, Iron Fireplaces, Tile Stoves,

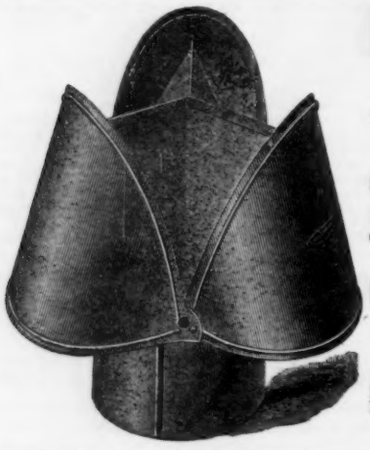
Artistic Wrought-Iron Andirons, Fenders and Fire-Sets. Our own Make.

Agts. for the new and beautiful "TRENT" ART-TILES.

Estimates given on Fireplace and Tile-work of all descriptions.

MURDOCK PARLOR-CRATE CO., 18 Beacon St., Boston.

Send six cents in stamps for Brass Catalogue.



Clover-Leaf Ventilators

AND CHIMNEY CAPS,

For Public & Private Buildings, etc.

Specially adapted for Sanitary Plumbing.

SURE CURE FOR SMOKY CHIMNEYS.

Cheapest and most effective Ventilator on the market. Working models mailed on receipt of 20 cents. Absolutely storm-proof. A down current creates an up draft.

MANUFACTURED AND FOR SALE BY

E. VAN NOORDEN & CO.,

389 Harrison Ave., Boston, Mass.

AGENCIES:

Stambach & Love, Philadelphia; Peck Bros. & Co., New York; Reuter & Mallory, Baltimore, Md.; Pierce, Butler & Pierce, Syracuse, N. Y.; A. Mollo, New Orleans, La.; M. M. Murphy & Co., Cleveland, Ohio; Jas. B. Scott & Co., Pittsburgh, Pa., Detroit Lead Pipe and Sheet-Lead Works, Detroit, Mich.

Street Lighting by Contract.

LANTERNS AND LAMP-POSTS SUPPLIED.

Please call on us before Purchasing.

CLOBE GAS-LIGHT COMPANY,

77 and 79 Union St., Boston.

The Great Church LIGHT.

PRINK'S Patent Reflectors give the **Most Powerful**, the **Softest**, **Cheapest** and the **Best** Light known for Churches, Stores, Show Windows, Parlors, Banks, Offices, Picture Galleries, Theatres, Depots, etc. New and elegant designs. Send size of room. Get circular and estimate. A liberal discount to churches and the trade. **L. P. PRINK, 551 Pearl Street, N. Y.**

TIRRILL'S EQUALIZING GAS MACHINE.

Makes Standard, Uniform Gas, wirhout Fire, Danger, Smoke or Smell, using plain Bat-wing Burners.

The only Machine in the world that can reliably do it. Send for circulars, and see who endorses this statement.

TIRRILL GAS MACHINE CO.

29 Dey St., N. Y.

IMPERIAL

GAS MACHINE.

DENNY BROS. & CO.,

34 Park Place, New York.

In use throughout the world. Send for descriptive pamphlet.

Skylights.

SKYLIGHT LITIGATION.

Notice to Owners of Buildings and Others.

I hereby caution all persons against purchasing and using my patented inventions in skylights, as the patents thereon have been held by the U. S. Court to be good and valid in law, and that I was the original, first and sole inventor and not anticipated, (see Official Gazette, Vol. XXII, page 1710).

My patents cover Ventilating Ridge, or Ridge Ventilator, inside Base gutters, Hollow Bars with gutters, cross gutters under all joints and all combinations of the same, so important to prevent leakage, and all of which features are essential to a perfect, permanent and thoroughly effective skylight.

The *Maker*, the *Seller* and the *User* of my inventions are equal infringers, and where the maker lacks responsibility, I shall hold the user. (*Vide* U. S. Revised Statues, Sec. 4884 and 4919).

Every Skylight furnished by myself or licensees will bear my label. Only those authorized by me use my name.

Every effort is being made to bring my suits to final issue, and no pains or expense is spared to that end, which will soon be reached.

No honest man knowing the situation, would buy or use the barefaced counterfeits that are in the market, under temporary protection afforded through tardiness of the courts and bare technicalities, especially when the difference in cost is but little, if any, more than the genuine, the quality and construction which are so well known.

GEO. HAYES, Inventor and Patentee,
71 Eighth Ave. New York.

THE BROOKLYN METALLIC SKYLIGHT WORKS.

JOHN SETON, 78 and 80 Washington Ave., BROOKLYN, N. Y.

☞ Send for new illustrated catalogue and price-list

BICKELHOUPT'S METALLIC SKYLIGHTS.

NO INFRINGEMENT on any other.

Are the Cheapest and Best.

Manufactured Solely by

BICKELHOUPT BROTHERS,

218 West 37th Street, New York.

Send for Illustrated Catalogue.

METAL SKYLIGHTS.

Warranted absolutely Storm, Weather, Fire and Condensation Proof, Free from Leakage from any source.

Skylights and Glass furnished and put up by us in any part of the country.

Ventilators and Chimney Caps or Smokey Chimneys.

CORRUGATED IRON ROOFING AND SIDING.

GARRY PATENT IRON ROOFING AND IRON SHINGLES.

Galvanized Iron Cornices, Window Caps, Copper Gutters and Conductors.

E. VAN NOORDEN & CO.,

389 HARRISON AVE., - - BOSTON.

Furniture and Interior Work.

THE DUDLEY SHUTTER-WORKER AND BURGLAR-PROOF LOCK.

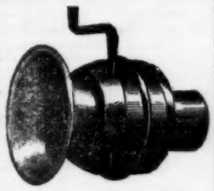
See Illustrated Advertisement in Monthly Numbers, or address,
5 BEEKMAN ST., NEW YORK.

Ostrander's New Oral Annunciator.

Superior in every respect. No Batteries or Wires.

Hotels, Apartment-Houses, Residences, Offices, Factories, etc. fitted in any part of the Country. Complete Outfits of Speaking-Tubes, Whistles, Pneumatic-Bells, etc., furnished. Send for New Catalogue. Estimates furnished.

W. R. OSTRANDER & CO.,
21 and 23 Ann St., New York.

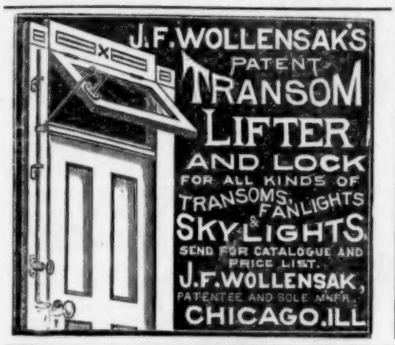


TOMLINSON & CARSLEY,
Designers and Manufacturers of
Fine Interior Finish and Furniture.
For Private Residences or Public Buildings. Estimates given on all kinds of Wood-work.
L. F. CROSBY, Designer, 55 Central Music Hall.
FACTORY, 2242 to 2256 . . - Arnold St., Chicago, Ill.

IMPROVED SEATING,
For
Schools, Churches,
Halls &
OPERA-HOUSES.

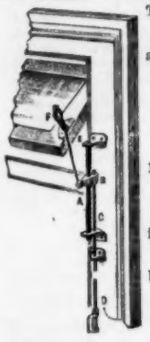
Send or Catalogue showing 20 Best Styles manufactured by
BAKER, PRATT & CO.,
19 Bond St., New York. 518 Arch St., Phila.

SETTEES AND OPERA CHAIRS.
The Newest & Best Styles for
SUNDAY SCHOOLS, CHURCHES, OPERA-HOUSES, LODGEROOMS, HALLS, OFFICES, &c.
Harwood Man'f'g. Co.,
91 Summer St., Boston.
Send for catalogue and state requirements.



Marble Mosaic Pavements,
Also Wall-Decorations in Mosaics, of either Marble, or Colored & Gold-Glass.
We employ Native Italian Artists specially trained for this work.
STILLMAN & NICOLL,
198-200 Tremont St. - Boston.

ARCHITECTS
and owners of new buildings should send for descriptive circular of this screen.
10,000 made in 2 seasons.
AMERICAN SCREEN CO.,
Brooklyn, Mass.

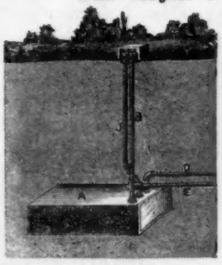


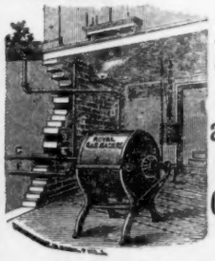
THE REIHER IMPROVED
Self-Locking Transom Lifter,
answers equally well for all transoms.
Hinged at the top.
Hinged at the bottom.
Hinged at the centre.
Exclusively manufactured by
F. A. REIHER & CO.
11 and 13 S. Canal Street, CHICAGO, ILL.
Send for Catalogue.
Cut showing the parts belonging to the transom lifter.
A. The locking-bar.
B. The self locking adjusting block.
C. The operating rod.
D. The lower bracket.
E. The lifting arm.
F. The transverse bracket.

Parquet FLOORS
All Styles of ⅞ in. thick, **tongue** and **grooved** in the European styles. Also
Wood Floors
WOOD CARPET
or **Ornamental Wood Floors,** 5-16 inch thick for rooms of all kinds, in new and old houses. We make a specialty of these goods for **Floors, Wainscoting, Walls** and **Ceiling,** both **Plain** and **Ornamental.** ☞ We have the **largest variety, largest stock** on hand, and the **largest factory** in the U. S., as well as a large **saw mill** and **factory** in a first-class **timber** country, devoted *exclusively* to this business, and defy competition in **price** or **quality** of goods. Send stamp for book of designs and prices, and the size of your rooms for diagram & estimates
JOHN W. BOUGHTON, 1119 Market St. Phila. Pa

The Improved Royal Gas-Machine,
Manufactured by Pennsylvania Globe Gas-Light Company,
Nos. 617 and 619 ARCH STREET, PHILADELPHIA, PA.
The Royal Gas-Machine.

THE BEST,
MOST
DURABLE,





Economical
and Reliable
Gas-Machine.

For lighting Country and Suburban Residences,
CHURCHES, OPERA-HOUSES,
Seminaries, Stores, Asylums, Hotels, Mills, Factories, etc.
All information furnished on application.

Andrews Folding Parlor Bed.

DURABLE. ECONOMICAL.
WILL NOT SAG.
Call and see them.
Send for Catalogue.
KEELER & CO.
EASTERN AGENTS,
83 to 91 Washington St., Boston, Mass.

DEGRAAF & TAYLOR,
Manufacturers and Dealers
FINE FURNITURE and DECORATIONS.
47-49 WEST 14th St., and 48 WEST 15th St.
Between 5th and 6th Aves., NEW YORK.

NEW YORK WOOD-TURNING CO.
NEW YORK CITY.
Patent Corner Blocks for Casings and Wainscoting;
Stair Builders' Supplies;
House and Picture Mouldings.
Specialty, Square Turned Work.
See illustrated advertisement in Monthly Numbers.

VENEER CEILING
For Library and Dining Room, in plain wood, not varnished or nicely decorated.
Three-ply Veneer Covers a Specialty.
Church Pews, Settees and Chairs for Halls, Lodges, Hospitals, Asylums and Depots.
GARDNER & CO.,
Patentees and Manufacturers of **Three-ply Veneer Seat.**
183 CANAL STREET, NEW YORK.

WESTERN ELECTRIC CO.,
Chicago, Boston, New York.
Electric Call-Bells and Annunciators,
For Hotels, Residences, Offices, etc. Electric Burglar-Alarms, Electro-Mercurial Fire-Alarms. Electric Gas-lighting Apparatus. Telegraph Instruments and Supplies.

HUGH MCMILLAN, *Pres.* W. H. MCKINLOCK, *Sec.*
W. A. JACKSON, *Vice-Pres.* F. E. FISHER, *Manager.*
and Treas.

DETROIT
Electrical Works.

ELECTRIC BELLS.
Burglar-Alarms, Mercurial Fire-Alarms, Watchman's Time-Detectors, Front Door Bells, Cash Calls, Hotel Annunciators, Push-Buttons, Batteries, Insulated Wire,

ELECTRIC GAS-LIGHTING
For Residences and Public Buildings, and a general supply of Electric Apparatus constantly on hand. Send for prices and estimates on work. All work guaranteed.

Detroit Electrical Works,
Corner Seventh and Woodbridge Sts.,
DETROIT, MICH.
Please mention this paper.

ESTABLISHED 1836.

JOHN FARQUHAR'S SONS,

SLATE, METAL, AND COMPOSITION ROOFERS.

Nos. 20 and 22 EAST STREET, BOSTON.

Order Box, No. 83 Mechanics Exchange, No. 35 Hawley St.

Agents for Warren's Patent Natural Asphalt Roofing. Special attention given to repairs of all kinds of Roofing.

Inventors and Owners of the following Patents: *First*, Patent Fastener for securing Slates or other covering to iron Purlines where the roof is wholly of iron. *Second*, A Roof composed of Wooden Rafters encased in Asbestos, Sheet Metal, or other fire-proof material, to which Iron Purlines are fastened, and the slates or other coverings secured by our Patent Fastener. The slates are then rendered underside with hair mortar or any other material. The object intended being a Light Fire-proof Roof, avoiding all condensation and preventing leakage.

THE

NEUCHATEL ASPHALTE CO.,

Sole Proprietors of the

Val de Travers Rock Asphalte Mines,

Canton de Neuchatel, Switzerland.

Val de Travers Rokc Asphalte,

For Floors, Sidewalks, Roofs, &c.,

Durable, Fireproof, and Impervious.

For estimates and full particulars apply to office, No. 54 Astor House, New York,

HENRY R BRADBURY, Manager.

EDWIN A. JACKSON & BRO.,

77 Beekman Street, NEW YORK.

Heat-Saving and Ventilating

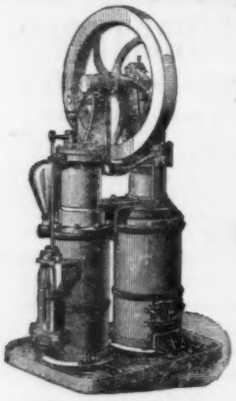
GRATE.

The grate thoroughly warms and ventilates my study, 18 x 28 feet.
Stanley Matthews, (U. S. Supreme Court).

I heat two rooms on first floor and a bed-room above with one grate.
John McConnell, Monticello, Ind.

My grate heats a parlor and a bed-room above when the mercury has ranged from 32 to 38 degrees below zero.
A. L. Strong, Vail, Iowa,

Its working has seemed to me absolutely perfect.
Edw. H. Jenks, Concord, N. H.



Improved Rider.

THE BEST PUMPING DEVICE

FOR

DOMESTIC USE,

ABSOLUTELY SAFE.

RIDER'S IMPROVED

HOT AIR PUMPING ENGINE.

Send for Catalogue.

C. H. DELAMATER & CO.

Manufacturers,

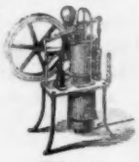
16 Cortlandt Street, New York.

40 Dearborn Street, Chicago.

Ericsson's New Hot-Air

PUMPING ENGINE,

For pumping water into tanks for City and Country Residences, Hotels, and general domestic use,



Perfectly safe. Burns Gas, Coal, or Wood.

Ericsons.

C. H. DELAMATER & CO.

Manufacturers,

16 Cortlandt Street, New York.

40 Dearborn Street, Chicago.

Jenkins's Patent Valves

Are the acknowledged standard of the world. Have been in use since 1868, under all possible conditions, and never have failed.

Send for New Valve List.

To avoid imposition see that valves are stamped, "Jenkins Bros."

JENKINS BROS.,

71 John St., N. Y. 79 Kilby St., Boston.

HELIOTYPE.

Photo-Mechanical Printing.—For the reproduction in printer's ink, on the printing-press, of Portraits and Views from Nature and all descriptions of Photographic work.

Photo-Lithography.—For the reproduction of Artists', Architects', Engineers', Surveyors', and other Drawings from originals in black and white.

Photo-Engraving and Zinc Etching.—For the production of cuts to print with type, from originals in black and white.

Photo-Caustic Printing.—For the lithographic reproduction of photographic subjects, without redrawing.

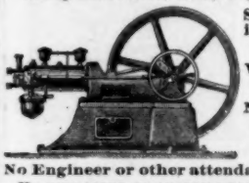
Lithography.
Chromo-Lithography. Of all classes.

Direct Transfer.—A patented process for the speedy reproduction (from originals made with ordinary ink on ordinary paper) of autograph letters, sketches, caricatures, etc., either as cuts or lithographs.

The Heliotype Printing Company, 211 Tremont Street, Boston, Mass.

NEW OTTO SILENT GAS-ENGINE.

Working without Boiler, Steam, Coal, Ashes, or Attendance.



Started by a Match it gives full power immediately.

When stopped all expense ceases.

No Explosions. No Fires or Cinders. No Gauges. No Pumps.

No Engineer or other attendant while running.

Unsurpassed in every respect for running elevators in Stores or Warehouses, pumping for hydraulic elevators, or domestic purposes, etc., etc. 1, 2, 3, 4, 7, 10, and 15 H. P. and upwards. Built by

SCHLEICHER, SCHUMM & CO.,

N W cor. 33d & Walnut Sts., Philadelphia.

NON-POISONOUS

SILICATE PAINT,

Does not discolor, chalk, or crack off, and covers further than lead.

Damp walls of churches, public buildings, and dwelling houses cured by using

PETRIFYING LIQUID.

SEND FOR CIRCULAR AND TESTIMONIALS

HOWARD FLEMING, Sole Agent, 23 Liberty St., New York.

American Fire Insurance Co., Phila.

CASH CAPITAL	400,000.00
Reserve and Liabilities	852,970.05
Surplus	551,548.96
Total Assets Jan. 1, 1884	1,804,519.21

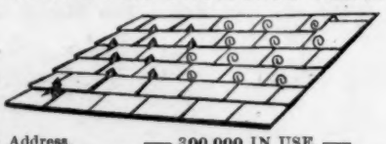
ARCHER & PANCOAST MFG. CO.

GAS-FIXTURES.

BOSTON.	NEW YORK.	CHICAGO.
12 West Street.	67 Greene Street. 68, 70, 72 Wooster Street.	250-252 Wabash Ave.

SPECIFICATIONS SHOULD INCLUDE

Folsom's Patent Roof Snow-Guards.



Address, — 300,000 IN USE. —

JOHN H. HILLER, 1410 Tremont St., Boston.

INSURANCE CO. OF NORTH AMERICA, - - of Philadelphia.

Cash Capital	$3,000,000.00
Reserve for Re-Insurance	2,156,781.63
Reserve for Unadjusted Losses and other Liabilities	473,492.82
Surplus over all Liabilities	3,250,778.61

METALLIC SHINGLES.

$5.50 per square | ANGLO-AMERICAN ROOFING CO. 22 Cliff Street, New York

THE BEST

BUILDING PAPER.

Sackett's Water-proof Sheathing.

Strong, clean to handle, inexpensive, impervious to moisture, water and gases. Send for samples.

NEW YORK COAL TAR CHEMICAL CO.

10 Warren Street, NEW YORK.

Water-Proof.

Air-Tight.

COMPLETE ROOFING.

Deadening Felt, Roofing Materials, Asphaltic Cement for damp walls, foundations, etc.

Send for Samples and Price-List.

WARREN EHRET ROOFING CO., Limited.

180 South Second Street, Philadelphia, Pa.

THE AMERICAN ARCHITECT AND BUILDING NEWS.

VOL. XVI. Copyright, 1884, JAMES R. OSGOOD & Co., Boston, Mass. No. 468.

DECEMBER 13, 1884.

Entered at the Post-Office at Boston as second-class matter.

CONTENTS.

SUMMARY: —
Completion of the Washington Monument. — A Terra-Cotta Company's Loss. — Paying for the Privilege of making Estimates. — The New Architect for the Eglise du Sacré-Cœur, Paris. — The General Hydraulic Power Company of London and its Work. — A New Pyrometer. 277
SANITARY PLUMBING. — XXXI. 279
ART IN CHALDEA AND ASSYRIA. — V. 281
THE WASHINGTON MONUMENT. 282
THE ILLUSTRATIONS:
Windsor Castle. — Sketches of the Trocadéro Palace, Paris. — Railway Station, Chestnut Hill, Mass. — Stores, Washington, D. C. — Cathedral, Baptistery and Leaning Tower, Pisa, Italy. 283
FIFTY-FIFTH EXHIBITION AT THE PENNSYLVANIA ACADEMY. . . 284
UNDERGROUND TELEGRAPH WIRES. 285
COMMUNICATIONS: —
Architectural Schools. 286
NOTES AND CLIPPINGS. 286

AMID the firing of cannon, the topmost stone was last week placed upon the Washington Monument, five hundred and fifty-five feet above the ground. There is some satisfaction in reflecting that the United States now possesses the tallest building in the world, but this cheap glory will not last long, and when it is gone there will be little else about the monument to be proud of. It is curious to see how completely the original design of the monument has been forgotten. As a part of Mills's novel and thoroughly classical conception, the obelisk, rising from the stupendous colonnade which supported it, was well-proportioned and elegant, but without that support it is an ugly chimney, and nothing more; and the ridiculous attempts which have been made ever since Mills's design was abandoned to argue people into the idea that the monument, as it now stands, is beautiful, or symbolic, or Egyptian, or anything else but a lanky pile of stone, simply illustrate the dulness and hypocrisy which reign supreme among us in regard to artistic matters. If it were not for the enormous cost of carrying out the original plan, with its peristyle of marble columns a hundred feet high, we should be strongly in favor of returning to it, but the monument has cost already eleven hundred and thirty thousand dollars, and we are sure that Washington, rather than have either as much more spent on a colonnade proportioned to the great shaft, or a smaller sum upon an inadequate little tail-piece to it, would prefer to see his monument finished up as quickly as possible, with a few sods about the base, and any surplus money devoted to erecting monuments of gratitude to him in the hearts of those poor fellow-citizens of his who are dying of starvation and pestilence.

CARELESS architects, who, to save trouble and expense, take the risk of placing in the hands of workmen original drawings whose loss would be at least an inconvenience, will do well to take warning by the loss that has recently been inflicted on many of their fellows by the burning, last week, of a portion of the Boston Terra-Cotta Company's works. The report of this fire probably caused as widespread anxiety amongst architects all over the country as could be brought about by any similar disaster, for it was at once stated that the fire had destroyed a large number of detail and other drawings, furnished by architects for terra-cotta work on buildings in every quarter, and the first report was so worded as to give the impression that the entire works were destroyed, and that therefore it would be impossible for the company to fulfil its contracts. This meant trouble, delay and loss to architects, contractors and owners, with only a compensating gain to lawyers. It is a gratification to find that the loss, though severe to the company, does not at all incapacitate it, as it was only the upper portion of a new building that was destroyed, the old buildings and machinery, which have until recently been sufficient for the business, being unharmed. The loss, however, is to a degree irreparable, as the portion destroyed contained the modelling-rooms and studios filled with the partly-finished models, the drawings, casts and designs of all kinds from which work was being prepared for the kiln. This loss, though great, is not irremediable, except in cases where original drawings have been consumed, but the company suffers a loss which cannot be made good in the destruction of its museum of duplicates, models, moulds, drawings, photographs and negatives Two sculptors having studios in the building also lose largely in similar ways.

A NOVELTY in estimating, to which it is worth while to invite the attention of builders, is reported from England. It seems that a certain gas-company in the County of Kent advertised in a local newspaper for tenders for building a new retort-house and other structures, adding a notice that the plans and specifications could be seen at the office of the company's engineer in London. A certain contractor, who writes on the subject to the *Builder*, called at the engineer's office to inspect the drawings, and was informed that a charge of one guinea, nearly six dollars, would be made for the privilege of looking at them, and that he would be supplied with a copy of the specification for an additional charge of half a guinea, and with tracings of the plans for a still further sum. The contractor, rather surprised, inquired of the engineer whether these payments were not intended as deposits, such as are often required of competing mechanics, with the object of excluding irresponsible persons, and are refunded to them when their bids are received. The engineer, however, replied that in this case no payments would be returned. As he said, "nobody wanted the builders to estimate, and the company would not pay for a hundred outsiders troubling about the plans." One would think that the builders might respond, with considerable effect, that if the gas-company did not want their estimates it might go without them; but the probability would be that after the respectable ones had been driven away by this ridiculous attempt at robbery, the others would combine to add to their bids a sufficient sum to cover their outlay for "the privilege of looking at the plans," with interest added, so that no one except the company would lose anything in the end. If we are not mistaken, it is only a few years since a builder in this country demanded payment of the architect for time spent in estimating upon a certain building, and got it; so that it seems as if either the English or the American builders had something still to learn on the subject.

THE many American friends and pupils of M. Daumet, of Paris, will be interested to know that he has been chosen to carry to completion the work upon the great church, or basilica, as it is called, of Montmartre, succeeding the late M. Abadie. We gave, a few months ago, a little description of the present condition of this structure, which has as yet barely reached the level of the first floor, the construction of the foundations, which were in a honeycombed and treacherous soil, with the vast crypt, having consumed an amount of time and money which would seem extraordinary under any other conditions than as a part of the imposing general scheme of the church. The building was to have been the crowning work of the regretted Abadie, and it is fortunate that a successor so skilful and experienced as the distinguished architect of the Château of Chantilly should have been appointed to finish it for him.

THE *Builder* gives a long account of the system of supply by which the General Hydraulic Power Company now furnishes water under pressure to a large number of customers in London. It seems from the account that a similar system of hydraulic power supply has been in use in the great Yorkshire town of Hull for about nine years, so that the engineers of the London company have had the advantage of studying an experiment already successfully made, and it seems very likely that a similar plan will be carried out before long in most large commercial cities. We have before spoken of the ingenious filters used to purify the water forced through the pipes, but details of the manner in which the power furnished by the Company is used have not before come under our notice. It seems that the Company is authorized by its charter to take one million gallons of water a day from the Thames, which would furnish, with the pumps now in service, about eight hundred horse-power for constant use during the day, but as the draft on the pipes is intermittent, this supply

would really, it is estimated, afford from two to three thousand horse-power. The consumption at present is only about one-tenth of the maximum power which the Company is indirectly authorized to furnish, but the demand is rapidly increasing. After passing through the filters, the water is led into a series of storage-tanks, which supply the pumping-engines. These, although working with eighty pounds steam pressure, force the water, by means of accumulators, into the mains at a pressure of eight hundred pounds to the square inch. The engines have automatic movements connecting the accumulators with the steam valves in such a way that when the pressure in the mains has reached the limit of eight hundred pounds, the pumps stop, but as soon as the pressure is lowered by a draught upon any supply-pipe, they start again and act until the maximum pressure is restored. Although seven or eight hundred pounds to the square inch would be a dangerous tension in steam-pipes, little is to be feared from the bursting of a water-pipe, and there is great economy in using the water at a high pressure, so that the cost of the supply system, which must be composed of very strong pipes, united with flange-joints, is in the end repaid. Several miles of mains have already been laid, and additional pipes are being rapidly put down, to accommodate new customers. The water, at the Company's pressure, is sold by meter measurement, the charge being from one to two dollars a quarter for each thousand gallons' supply, with an extra charge of a dollar and a quarter as meter rent. This brings the cost of lifting by the Hydraulic Company's power, economically applied, to about one cent for fifty foot-tons; that is, let us say, for hoisting a ton weight fifty feet into the air; which is from one-quarter to one-half as much as would be charged by the ordinary water companies for an amount of water, under the usual street pressure, capable of doing the same work.

As might be expected, the most usual application of the power is for lifting, and freight and passenger elevators of all kinds are operated by it; but it is used in many other ways. The proprietors of a lead manufacturing establishment, for instance, have taken out all their steam machinery, and use the hydraulic power exclusively, not only for hoisting and transportation, but for making lead pipe by forcing the metal over a mandrel. For this a pressure of about five thousand pounds to the square inch is needed, and is readily obtained by means of a double hydraulic press, comprising two cylinders of different diameters, and a piston in each, connected by a single rod. By admitting the water at the Company's pressure to the large cylinder, a pressure is produced in the small cylinder inversely proportionate to the sizes of the two pistons, and the same pressure is then easily transmitted from the small cylinders to the place where it is wanted. In several places along the river bank hydraulic cranes, of a kind familiar abroad, though little used here, are used for unloading vessels, and hoisting from them into storehouses. Many of these cranes are made with double power, like our double-power hydraulic elevators, and as they are turned, raised, and lowered with the utmost facility, they form admirable appliances for their purpose. It has been doubted, on theoretical grounds, whether hydraulic force could be transmitted through pipes for any considerable distance, without much loss, but one establishment, using the Company's power, is situated nearly two miles from the pumping-station, and although an auxiliary pumping-station was established expressly to supply any defect in force which might be observed in this distant district, the engines placed there have never been used, and no appreciable difference in power or steadiness is observed between the service at this point, and at others in the vicinity of the main pumps. In fact, it has been ascertained that hydraulic power can be conveyed through small pipes at the rate of one foot per second, with a loss of only two per cent per mile, which is less than the usual deterioration of steam power under similar circumstances.

La Semaine des Constructeurs describes a pyrometer, constituted on a new principle, by which the temperature of a kiln or furnace can be observed with great facility and precision. The ancient pyrometers, as a rule, are very inaccurate. The earliest, that of Wedgwood, measures high temperatures by the contraction of a piece of clay, which, of course, must be placed in the fire for a time, and then taken out and allowed to cool, all of which takes time, and involves some risk to the contents of the furnace by inopportune opening of the doors, while the contraction of clay is incapable of very accurate measurement, and at best gives but a rough idea of the heat to which the mass has been subjected. Other pyrometers have been made of metal rods, which by their expansion and contraction may be made to move an index on the outside of the furnace, but the increase of length by expansion is very slight, and is said to change its rate, so that this method is unsuited for accurate observation. The new pyrometer, which was invented by an ingenious French blacksmith, employs water as the means of measuring the heat; or, more properly, as a vehicle for bringing, so to speak, portions of the heat from the furnace, to be measured outside. As water is volatilized at a temperature of two hundred and twelve Fahrenheit degrees, it would seem to be a rather unavailable material for measuring pyrometric temperatures, which range from fifteen hundred to three thousand degrees above zero, but the difficulty is readily overcome by keeping the water in such rapid motion through the fire that it does not have time to become sufficiently heated to form vapor.

As now made for sale, the de Saintignon pyrometer comprises a tank of water, a filter, a pipe, bent in the middle into a long loop, which projects through the wall of the furnace into the fire, two mercurial thermometers, and a glass tube open at the top, and closed at the bottom by a stop-cock. For convenience in connecting, portions of the tubing are of India-rubber, and the two thermometers and the open tube are mounted side by side on a board. When in use, the stop-cock at the bottom of the open tube is turned, so as to allow water to run through it. The supply from the tank, passing first through the filter, which removes sediment or suspended substances, runs to the first thermometer, and, circulating about its bulb, brings the mercury column to the point corresponding with its own temperature. Thence it passes into the bent tube in the fire, entering on the lower side of the loop, and returning by the upper side, which leads it back directly to the second thermometer, placed beside the first; and after circulating about the bulb of this thermometer, it runs into the open tube, and escapes thence by the stop-cock at the bottom. As the supply tank is placed at some distance above the rest of the apparatus, the water in the open tube would rise to the top and overflow, unless its level were kept down by the escape through the stop-cock. If the stop-cock were thrown wide open, the water would all run out of the tube; while, if the escape were less rapid than the incoming current, the water would gradually rise in the tube and overflow. When the escape is exactly equal to the supply, the water level in the tube remains constant, indicating a perfectly uniform flow through the apparatus. The pyrometers are usually regulated for a flow of a quart a minute as a maximum, but it is easy to set them for a more rapid flow, if the heat to be measured is unusually great. In flowing at this speed through the loop of pipe in the fire, the water becomes warmed, and the thermometer immersed in the current flowing out of the furnace shows in consequence a higher temperature than that about which the inward current circulates. The instrument gives, therefore, three data, the velocity of the current, the temperature of the water before entering the fire, and its temperature on leaving it; and from these the actual temperature of the furnace can be readily calculated, with the help of a few simple preliminary tests, to show the relation between the difference in temperature of the inflowing and outflowing water, and the degree of heat in the furnace. These preliminary tests are made upon the instruments before adjusting them, and it is of course easy to regulate them for any range of temperature, but as ordinarily sent out the proportion between the difference of temperature of the warm and cold thermometer and the furnace temperature is fixed at one to twenty-five; so that if the cool thermometer shows the water from the tank to be at forty degrees, and the one beside it shows the current out of the furnace to be at one hundred and twenty degrees, the actual temperature of the furnace is two thousand degrees above zero. The calculation is simplified by the use of a movable graduated card, set at the side of the warm thermometer, with an index at the lower end, extending over to the cool thermometer. On sliding up the card until the index meets the top of the mercury column in the cold thermometer, and then observing the point on the card reached by the column in the warm thermometer, the furnace temperature can be immediately read off.

SANITARY PLUMBING.[1] — XXXI.

WASH-BASINS.

General Considerations.

Ordinary Basin-Strainer. Most Common Form. Actual Size.

THE character of our lavatories is a matter of very much greater importance than is usually supposed. We have been in the habit of selecting our wash-basins and bath-tubs purely from a standpoint of convenience, appearance and economy. Sanitary considerations have been quite overlooked, in the belief that they have little or nothing to do with the form of these particular fixtures, so long as their traps and waste-pipes were properly made. This is a very serious error, and particularly so in relation to wash-basins, in the choice of which sanitary considerations should outweigh all others. We say this advisedly, and for the following reasons: as usually constructed, the outlet is altogether too small in proportion to the size of the trap and waste-pipe. The result is imperfect flushing of these pipes, gradual accumulation of filth in them, and the various serious evils to which such accumulations give rise. The initial cuts show the actual dimensions of the ordinary basin and sink strainer, as traced from the brass-work when new. It will be found, by accurately measuring these figures, that the amount of water-way is just equivalent to that of a three-fourths-inch pipe. A very short usage soon reduces this meagre opening, through the collection of sediment and lint, to a still smaller stream. Accordingly we find that by far the greater part of the ordinary basins now in use discharge a stream not over half an inch in diameter. The waste-pipes are usually an inch and a quarter or an inch and a half in diameter, a capacity which is given for the purpose of ensuring the safe removal of the water delivered by two supply-faucets running full force, under medium or high city pressure, and escaping through the outlet and overflow passages combined, together with a possible simultaneous discharge of other adjoining fixtures entering the same waste. Now a half-inch stream of waste-water trickling through pipes capable of delivering ten times as much, fouls, but does not scour them. The writer has taken out such waste-pipes and found them more than half filled with slime and filth, and in places where the pipe ran nearly horizontal, or made sharp bends, he has found them nearly filled with the putrefying mass. No amount of ventilation can cleanse such pipes. But the sediment was soft and gelatinous, and would easily have been swept away by the powerful discharge of a basin filling the pipes full bore.

Ordinary Sink-Strainer. Actual Size.

In order to test this, the writer caused a piece of waste-pipe in which a coating of sediment had been collecting for a long time to be attached to the outlet of a wash-basin constructed with a large outlet, and allowed the water to escape through it at the rate of about a half a gallon a second. After two or three discharges it was found that almost all of the coating of greasy sediment had been removed by the powerful friction of the water.

It must be borne in mind that the scouring effect of a stream of water (irrespective of its size) which fills the waste-pipe "*full bore*" is entirely different from that which only partially fills the pipe. The former flows with a velocity and force determined by the weight of its entire column, or under a head equal to its perpendicular length; while the latter falls *without head*, because the air breaks the continuity of the water column, and then the velocity and force occasioned by the head is entirely destroyed.

As the first aim and principle of sanitary engineering is to remove foul matters as rapidly and completely as possible, so in the present connection, our first care should be to see that our basins are formed with outlets large enough to fill the pipes full bore in order to accomplish this result.

Had the framers of our present plumbing laws included a provision requiring all lavatories to be constructed on this principle, instead of insisting upon the worse than useless trap and branch-waste ventilation, the public would have been greatly benefited. No reason is given why the laws should now continue to exist with these serious imperfections. It remains to be seen how soon the good sense of the public will demand their correction.

Besides the important sanitary advantage of a rapid discharge, we have others of economy and convenience. To empty an ordinary basin requires a very considerable amount of time and more patience than the majority of people possess. The result is that people fall into the habit of washing from the faucet rather than from the basin, and a great waste of water is involved. A quick waste and convenient method of operating and controlling it results in a saving of water and very great convenience in usage. A knowledge that a sudden discharge of a basinful of water through the pipes acts as an important sanitary measure, after the manner of a flushing-tank, in cleansing them from end to end, leads to a legitimate use of the basin and an economy of water, a consideration which the water-companies and the public in times of drought will not be slow to appreciate.

[1] Continued from page 221, No. 463.

Following the course we have adopted in the preceding chapters, let us imagine an ideal basin, and then review the state of the plumbing art, to see how far such an ideal has been realized.

A critical examination of the leading types of fixtures now in use is necessary to enable us to understand clearly what features are to be recommended, and what are to be avoided. Such a classification is also indispensable to enable the reader to judge at once for himself the merits of any fixture he may be called upon to examine. It systematizes his ideas, and in this lies its chief difference from a mere "cataloguing" of plumber's supplies, which oftener results in confusion. From these considerations it is evident that our drawings must illustrate, not imaginary types, but those in actual use, in order to be of any practical benefit as a guide in selection, and hence we shall in most cases select some special fixture as a standard representing its class.

Classification of Requirements.

The ideal wash-basin should possess the following characteristics:

(1) It should be so formed as to permit of a discharge sufficiently rapid to fill the pipes "*full bore.*"

(2) It should provide for suitable overflow without concealed or inaccessible passages.

(3) The whole of the fixture and each of its parts, including the discharging mechanism, should be visible and easily accessible at all times from the outside without removing any part.

(4) Its outlet passage should be controlled by a mechanism requiring but a single, simple movement to operate it, and the minimum of strength or effort.

(5) It should be easy to set, and have no parts liable to clog or get out of order.

(6) It should be simple, durable, economical, and unobjectionable in appearance.

Classification of the Different Kinds of Wash-Basins.

We have divided basins into two general classes: (I) those having concealed overflow passages, and (II) those having visible and accessible overflow passages. Each of these we subdivide as follows:

Basins having concealed overflows into: —

(*a*) Plug-and-Chain Outlet.
(*b*) Waste-Cock Outlet.
(*c*) Valve Outlet.
(*d*) Plunger Outlet.
(*e*) Floating-Plug Outlet.
(*f*) Stand-Pipe Outlet.
(*g*) Receiver Outlet.

Basins having visible overflows into: —

(*a*) Funnel Outlet.
(*b*) Stand-Pipe Outlet.

Each of the above classes may have for its supply either ordinary standing faucets or nozzles supplying water at some point or points below the basin-rim.

(I) *Wash-Basins having concealed Overflow Passages.*

This class of fixture violates one of the first conditions of sanitary plumbing. A portion of the apparatus intended to carry off waste water at irregular and uncertain intervals, by which it becomes fouled without the chance of cleansing through flushing action, is placed in such a position that it cannot be seen nor reached without disconnecting the whole fixture.

Our first subdivision of this class is the ordinary

(*a*) *Plug-and-Chain Outlet Basin.*

We see here (Fig. 240) the concealed overflow pipe constructed of lead and so placed as to be altogether inaccessible. Being above in open communication with the air of the room, it taints it with the decomposing soap and filth with which its sides soon become coated. The ordinary wash-basin has no proper flange for connection with the lead overflow-pipe; the joint has therefore to be made with ordinary putty, which can never be made permanently and surely tight. The lead pipe must be connected with the main waste-pipe above the trap, and the joint here must be wiped with solder. Thus, to set an ordinary wash-basin, the plumber has two extra joints to make, which add both to the expense of the work and to the chances of imperfection and leakage. It is an exceedingly common thing to find the overflow-pipe wrongly connected; it is sometimes entered below the trap, sometimes attached directly to the trap-vent, and sometimes connected with the wastes of other fixtures in such a way as to open, through the vent-pipes, an indirect avenue into the house for sewer-gas. It forms, in short, an unnecessary and dangerous complication to the plumbing, and these basins should never be used.

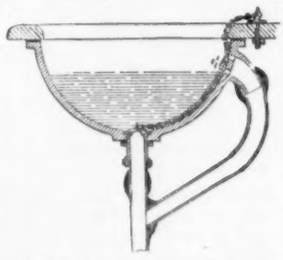


Fig. 240. — Ordinary Wash-Basin with Plug-and-Chain Outlet.

Many house-owners stop up the holes in the earthenware leading into the overflow-pipe at considerable inconvenience to themselves, in

the hopes of avoiding the chance of the entrance of offensive or injurious gases into the house through this channel. With defective traps, or with traps whose seal is liable to be quickly destroyed by evaporation, siphonage or other cause, this precaution against danger would not be useless if the overflow-pipe connections could be made certainly tight, especially when the fixture is left for some time unused. As they are made, however, it is probable that no such precaution would form any reliable security.

The use of the plug and chain, which characterizes this type of basin, is another serious defect. The chain, lying in every successive formation of dirty water, collects gradually in the recesses of its links an unknown quantity and variety of filth, which cannot be entirely removed, on account of its irregular form, without the use of special acids or constant scrubbing with a brush, a process never applied to it. The length of wire used in an ordinary basin-chain averages six feet, and has a surface of about fourteen square inches,[1] a surface which in consideration of the peculiar adaptability of the form of the links for retaining dirt, presents a very formidable area of pollution. To those persons who use their reasoning powers in these matters, the idea of washing the face in water defiled by a chain transferred immediately from the dirty water of some unknown predecessor is with good reason exceedingly repulsive. The chain, moreover, frequently breaks, and then the hand must be plunged into dirty water to remove the plug.

The position of the chain and plug at the bottom of the bowl is moreover peculiarly inconvenient, inasmuch as they are in the way of the hands, which should meet a smooth, unbroken surface of earthen-ware, rather than the hard and irregular outlines of the brasswork. If this latter consideration appear to some trivial, it does so only because custom has rendered us callous to such defects: the defect none the less exists, and acquires importance through the frequency of its repetition and the constant use of the fixture in which it occurs. The fact that it is altogether unnecessary is a sufficient reason for its abolition. Thus we find that the wash-basin in most common use possesses *not one of the six desiderata* enumerated in our table of requirements. These basins are sometimes made elliptical instead of circular in form. This adds considerably to their expense without corresponding benefit.

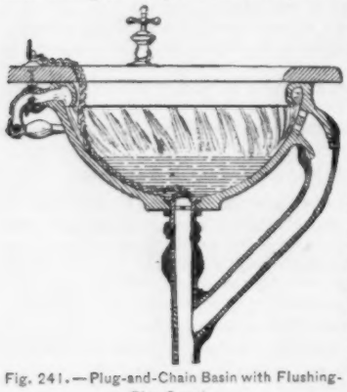


Fig. 241.—Plug-and-Chain Basin with Flushing-Rim Supply.

Figure 241 represents a plug-and-chain basin, with a flushing-rim supply. The disadvantages of this arrangement are quite as great as the advantages. Water cannot be drawn into a separate vessel from this form of supply as is often quite important and possible with the ordinary standing faucet, and the cost of the fixture is greatly increased. The object of the flushing-rim is to cause a partial cleansing of the sides of the basin, by the running water before filling. But the scouring is quite imperfect. Sediment will ultimately collect in spite of the flushing, and must be removed by scrubbing.

Constructing the overflow-pipe in one piece with the basin as shown in Figure 242, gives a great advantage. The danger of defective overflow connections is thus avoided, and the setting of the basin is very much easier. A closure of the overflow holes of this basin affords an actual safeguard against the evils arising from evaporation of the water-seal, caused by trap-ventilation, where a fixture is left unused for any length of time, provided the outlet be also tightly closed and both closures be carefully watched. But in this case the danger of damage from overflow arises, and the overflow passage becomes practically useless. The difficulty of closing up tightly all the openings is so great that no householder would undertake it, if it had to be done and undone every time the fixture were left in temporary disuse.

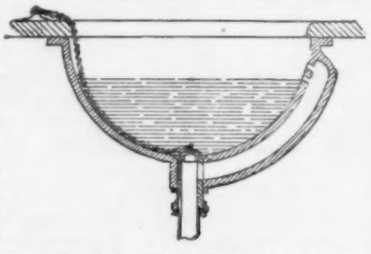


Fig. 242.—Plug-and-Chain Basin with all Earthen-ware Overflow.

(*b*) *Waste-Cock Outlet.*

In this type of wash-basin, the outlet passage-way is controlled by an ordinary ground brass water-cock. The arrangement is expensive, and extremely liable to become clogged and get out of order. The general type may be further sub-divided into three kinds; (1), those having a *perpendicular* waste-cock moved by a rod passing through the marble slab, and having its handle behind the basin; (2), those having a *horizontal* waste-cock worked from the front of the stand below the bowl; and (3) those in which the waste-cock is operated by a lever movement.

As an illustration of the first kind, we have the so-called "Boston Waste," Figure 243, which is very popular. There is probably no form of basin-fitting more faulty in principle than this. It contains two independent, inaccessible and invisible foul-water passages, one forming the overflow passage, and the other the outlet passage-way between the strainer and the waste-cock. This latter passage forms an elongated *cesspool* for the defilement of the clean water entering the basin. After using the fixture, the waste water escaping through this channel deposits part of its dirt, particularly floating matters and soapsuds, all along its sides, and leaves it there to be taken up and applied in a diluted solution to the hands and face of the next comer. Six wiped solder joints, one putty joint, and five threaded joints, making *twelve* in all, are required to adjust the waste-pipes of this apparatus and its trap below the basin slab! No wonder the plumber is constantly in requisition to keep in repair such a complicated machine so long as the owner allows it to remain in his house. Not the least of its defects is that the passage-way for the waste water through the ground cock is usually so small (scarcely a quarter of an inch wide) that the least deposit of sediment will entirely prevent the outflow of the water. The "Boston Waste" cannot be too strongly condemned. The great extent of its use in spite of its high cost shows how little knowledge the public has in these matters, and how important it is that their attention should be called to them. In Figure 244, we have the "Boston Waste" complicated with still another disorder. The overflow pipe, instead of opening into the upper part of the basin descends, and re-enters the waste-pipe on the inner side of the waste-cock. This doubles the length of the inaccessible cesspool between the outlet and the waste-cock. Its object was apparently to trap the overflow pipe; but as the waste-cock cannot be relied upon as a sure seal at all times against sewer-gas, because we cannot depend upon its being always turned off after use, this device becomes valueless.

Fig. 243.—Waste-Cock Outlet Basin, the "Boston Waste."

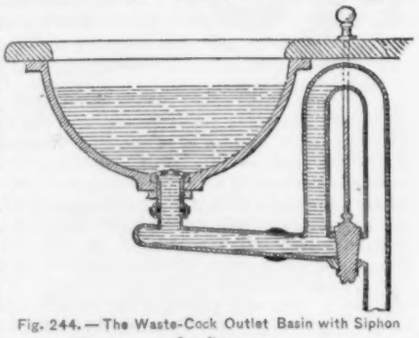


Fig. 244.—The Waste-Cock Outlet Basin with Siphon Overflow.

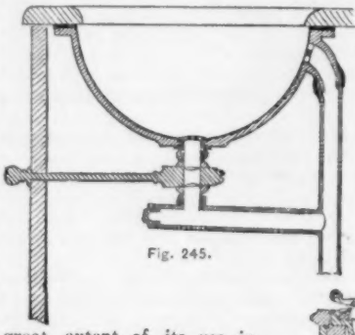


Fig. 245.

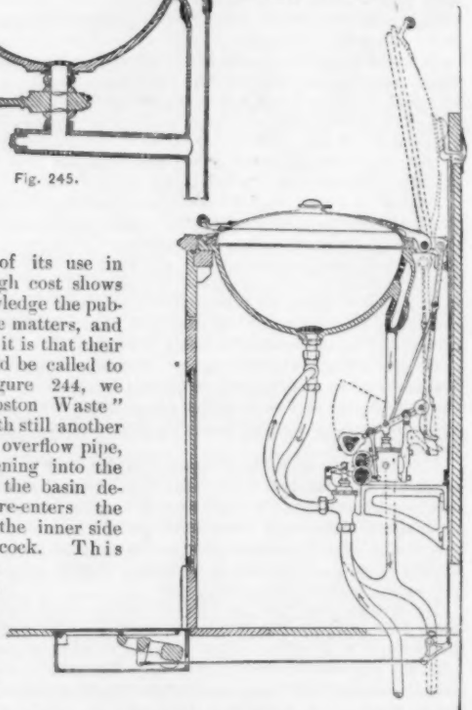


Fig. 246.—Waste-Cock Outlet Basin with Lever Movement.

Figure 245 represents the second kind of waste-cock outlet basin, in which the waste-cock is horizontal, and operated through the riser

[1] The writer's basin-chain has sixty links, each made of wire one and one-fourth inches long. The wire is over three-sixteenths inches in circumference. The total superficial area of the chain amounts, therefore, to more than fourteen square inches.

or wood-work of the wash-stand. This arrangement necessitates encasing the basin in wood-work, a requirement which adds another to its many disadvantages. In other respects it is similar to the "Boston Waste" already described.

Figure 246 illustrates by a special apparatus (probably never executed in its entire perfection) the third kind of waste-cock outlet basin. The fixture shown is an English invention, and is useful to illustrate the evils of over-complication. The machinery is moved by cranks and levers connected with a pedal in front of the stand. How the inventor could have imagined any one would be found willing to pay for so complicated a piece of brass-work is difficult to understand.

In this device a lid is employed to cover the basin when it is not in use. Two waste-cocks, one for the main outlet, and the other for the overflow, and one or more supply-cocks are used, and these cocks are connected with the lid in such a manner that, when the lid is raised or lowered, the supply and waste cocks are respectively opened and shut. The waste-cock thus does not serve as a seal against sewer-gas, and a separate trap not shown in the drawing, is required in connection with the apparatus.

The simultaneous movement of supply and waste cocks of this kind would require a power far greater than could ever be applied in practice. The inventor appears to have innocently imagined that nothing but perfectly pure water would ever be passed through his lavatory. Any impurity in the waste water would destroy the working of this remarkable engine in a very few days, so that a Hercules could not move its net-work of valves and levers, nor clean out the Augean impurities installed therein.

ART IN CHALDEA AND ASSYRIA. — V.[1]

Sir Paul Pindar's House. London. Eng.
Interior of Drawing-Room.

THE Chaldean used hard stone in the few examples of his sculpture that have come down to us, and the Assyrian also upon occasion; but the chief materials with the latter were soft limestone and alabaster. Of these were formed their bas-re-reliefs, and the little resistance they offer to the chisel partly explains the over-emphasis of the local style. Instead of the disposition we find in Egypt to simplify and summarize form, we find a tendency to exaggerate and amplify it. The joints, when seen, are very strongly marked, and the muscles stand out in knotted lumps; but the chief reason for this mannerism is found in the Mesopotamian's strong love of movement and effort. The Egyptian, as M. Perrot says, loved force in repose; the Assyrian, force in action. All his scenes are full of movement, and, with scarcely an exception, his figures are on their feet. When animals are treated, the emphasis of method is joined to a true knowledge of form and structure, a true feeling for the essential nature of the model, and therefore it becomes a powerful artistic expedient. From it result the unequalled strength, action and life of lion, ass and mastiff — their almost supernatural force and fire — a force and fire which are more than lifelike, and yet not unnatural, but merely, if I may so say, the artistic apotheosis of Nature. But the human form had been less clearly described, less perfectly understood, and less beloved; so here the technical exaggeration produces a far less fortunate effect. The sculptor strains violently after force and action, but does not succeed in reaching them.

A point that deserves attention, especially since it is in such marked contrast alike with the earlier Egyptian art and with the later Greek development, is that female figures are absent from Assyrian sculpture, another unfortunate consequence of the customs of Eastern civilization. The perpetual dignity, gravity, almost sombreness of the art is also a conspicuous quality. We find no caricatures, no expression of playful moods or lighter qualities — nothing but the severe stateliness of royal existence. Even when the king hunts, he is as solemn as when he worships; the last thing we should say about him is that he is amusing himself.

Both the Chaldean and the Assyrian sculptor formed figures of moulded and burned clay, and both were admirable workers in bronze. The splendid *repoussé* bands that decorated the gates at Balawat, and that show the campaigns and victories of Shalmaneser II (of the first Assyrian empire) have already been mentioned; but metal was also cast in the round, as is proved by splendid bronze lions that were made in the time of Sennacherib, son of Sargon. Bas-reliefs and inscriptions cut upon the rock have immortalized the names of Assyrian kings in more than one part of Mesopotamia.

It has been impossible here to retrace M. Perrot's account of all the variations that Assyrian sculpture underwent between the time of the first monarch of the first empire and the last monarch of the second. They were never so great as to alter its dominant characteristics. A desire for more variety and more freedom characterizes the latest relics, and M. Perrot is inclined to think that the art was still progressing when Nineveh fell, and with it all the artist's future. But even when it began it was not a young and fresh inspiration; it was derived from Chaldea, and it perpetuated — accented, indeed — the predilections there displayed. This fact may serve to explain the anomalies it exhibits: conventionality combined with strong love of force and action, skill mixed with awkwardness, emphasis joined to tiresome repetition. And the necessity for rapid production, moreover, must have worked for evil. When an entire palace had to be decorated for each successive monarch, it was hardly possible that all the work should be confided to the most skilful hands, or that any sculptor should take pains to develop all that might be in him. Patronage is a good thing for art, and yet it may crush art's noblest qualities, if its demands are too extensive and too insistent.

Every one knows what immense numbers of relics have been found that once belonged to Assyrian libraries and record offices. They are not rolls of papyrus, as in Egypt, but tablets of clay, on which the inscriptions are cut in those peculiar, sharp, wedge-like signs we call "arrow-heads" or "cuneiform" characters. And upon the bas-reliefs we find them, too, not confined at all to the background, but running right across the whole slab, figures and all. This system of writing, says M. Perrot, was, like the Egyptian and the Chinese, originally nothing more than a series of ideographic signs, "the abridged and conventionalized representation of familiar objects." But in the very dawn of history, in the very first relics of Chaldean writing we possess, the script is no longer *hieroglyphic*, like the Egyptian; it was much more rapidly and thoroughly conventionalized. There are only a few very ancient tablets where we find anything that can be perceived to bear the remotest resemblance to a natural object. It is interesting here to trace the reaction of his material upon man as he creates and uses it. Papyrus would of course be very scarce and dear in Mesopotamia, and what should be used in its place if not the clay which was the Mesopotamian's friend in so many other needs? What so cheap, so easily written upon when soft, so durable when burned? But it was, of course, much easier to write upon one's soft clay with one's pointed instrument, if one used short, straight strokes only. Hence the Mesopotamian script was, before the days of early Chaldean greatness even, transformed by the omission of all curved and all continuous lines into the arrow-heads we know, with short and sharply-cut indentations, deeper and broader at one end than at the other — struck rather than engraved on the material. For a while, as we can see from the oldest specimens, certain signs retained, in the way their wedges were arranged, some remote semblance of the objects they indicated, discernible only, however, when we already know what they mean. But before the full development of art, even this much trace of primitive fashions had disappeared, and the script had become purely conventional. The most important bearing of the fact upon our present subject is that, for this reason, the Mesopotamian sculptor and painter were not, as were their Egyptian brethren, in any sense "scholars of the scribes." Only in the sculptor's *handling* does M. Perrot find any trace of the influence of current modes of writing. "The Chaldean artist must have carried out his modelling with a play of hand and tool learned in cutting texts upon clay, and still more upon stone. The same chisel-stroke is found in both, very sure, very deep, and a little harsh."

Perhaps some day the intermediate art which is now lacking may be disinterred for us — the art that lies between the early Chaldean sculptures we possess and those others which, though Assyrian beginnings, yet cannot be called primitive efforts; but even so, as M. Perrot says, Mesopotamian sculpture could hardly rival that of Egypt. The rarity of statues in the round; the absence of portraits and of figures treated with portrait-like fidelity; the non-existence of the nude, and the weakness in treating humanity that this implies; the absence of the feminine element, that *ewig Weibliche* which nothing else can replace in art; the narrow range of subject-matter; the conventionality of theme; the persistence in one key of sombre stateliness; all these characteristics work together to place it below an art which produced such varied works as the art of Egypt. Nor, apart from questions of variety, is there any one respect in which Assyrian sculpture can be called as attractive and satisfying as that of Egypt, excepting only in its treatment of animals. In this point it has scarce a peer in any period of art; but even here it is chiefly *strength* that we admire. Beauty, as the Greeks explained the word, as even the Egyptians sometimes understood it, is absent almost wholly from the work of the Assyrian sculptor.

Like all southern peoples, the Mesopotamians had a strong love of color. M. Perrot enforces the important, but often misunderstood fact that very strong light *destroys* the apparent modelling of objects; that, by the reflections it casts into the shadows, it interferes with our power to distinguish one plane from another. In every country

[1] *A History of Art in Chaldea and Assyria*, from the French of Georges Perrot and Charles Chipiez. Illustrated, translated, and edited by Walter Armstrong, B.A. London: Chapman & Hall, New York: A. C. Armstrong & Son, 1884.

Continued from page 256, No. 404.

where a vertical sun shines in an unclouded sky, the decorator has had to invoke the help of color against the violence of the light—has had to accept its aid in strengthening his contours, and in making his figures and ornaments stand out against their ground. Our author believes — and it seems to me upon good grounds, both of general theory and of actual evidence, though some explorers differ from his opinion — that the Assyrian bas-reliefs were touched with color to enhance their effect and to bring them into harmony with the painted walls above them. For we must not, I may note, picture to ourselves the Assyrian alabaster as the light-colored, variegated, brilliant, almost translucent stone we are most accustomed to associate with the name; it is a cold, gray stone, without any decorative charm. Black, white, red and blue seem to have been the only colors used on the reliefs. And the Assyrians also employed what is called "natural polychromy." They built up a figure out of several different materials, each having a distinct color value of its own. Wood, enamel, colored earths, bronze, gold, silver, and brilliant stones seem all to have been used in this art, which may be regarded as the direct progenitor of that which produced the chryselephantine statues of Greece.

Painting, as modern nations understand the word, was a sealed art to the Mesopotamians, as it was to the Egyptians. Decorative painting, in which colors were used broad and flat, and with little regard to the direct imitation of Nature, was the only style they practised.

Pottery of many kinds was of course a common material, and glass was also invented at a very early period. It has been found both opaque and transparent, and a lens of rock-crystal was discovered at Nimroud, by Layard, which may have been used as a magnifying or as a burning glass. It is the oldest object of the kind of which we have any knowledge, and M. Perrot believes that if more lenses are unearthed, we may fairly conclude that these ancient folk knew how to reinforce their sight.

The metal dishes and utensils figured and described in M. Perrot's pages are very interesting and sometimes very charming. Some are purely Assyrian in their decoration; others show an admixture of Egyptian motives, now copied boldly, though without intelligence in the use of the hieroglyphics, and now subdued into fainter likeness of themselves and in better accord with the native elements they mingle with. Examples of similar dishes are found in the Cypriote collection at the Metropolitan Museum, and have been discovered in Greece, in Magna Græcia, and in Etruria. It is a question as to whether or no they are all of Phœnician origin. M. Perrot is inclined to think that they were first made in Nineveh and Babylon, and afterwards imitated and turned into articles of commerce by the Phœnicians.

Among a people who disliked nudity as did the Assyrians, and who were lovers of luxury and splendor in every form, it is but natural that a peculiarly large share of artistic attention should have been paid to garments. Textiles of all sorts were produced in great variety and beauty by the looms of Babylon and Nineveh, and were famous throughout all ages of antiquity. The Bible alone would tell us as much, were no other evidence forthcoming; but the Assyrian sculptor has left us testimonials which could hardly be more complete. His neglect of the nude and the softness of his stone alike tempted him into an elaborate rendering of clothing, which is not even remotely approached by any other artist of antiquity. Figures, animals, the sacred tree, the rosette and palmette, and every other current form of band and pattern are found minutely recorded as having been employed in garments, which M. Perrot believes were embroidered by the needle. All the elements of ornamentation that were used in other places were used here, too, and the system of arrangement is the same: a central motive is surrounded by bands of decoration, as it is, for example, on the bronze dishes; but the adaptation is skilfully made, and the shape and character of the garment are well preserved under all its abundant embroidery. The weaver was of necessity less free and naturalistic in style than the worker with the needle, but he was also very clever and very artistic, as we may see from the great sills of stone and metal, which very evidently repeat such patterns as had become familiar in woven rugs and carpets.

In spite of the justice M. Perrot does to the superiority of the Egyptian over the Mesopotamian decorator, there is one particular contrast that I venture to note on my own account. The Egyptian seems to me to have had a truer and finer decorative instinct, because he did not depend so entirely on formal symmetry in producing strictly decorative results. The Assyrian was very formal, even in his bas-reliefs: but he was absolutely formal in his more purely ornamental designs. He obtains the desirable balance and harmony of parts only by the simplest expedient, that of exact repetition and opposition. There is nothing in his work at all analogous to such Egyptian designs as, for instance, the "Hunting in the Marshes" and the "Water Combat," which were reproduced in these pages when M. Perrot's earlier volumes were reviewed. Here we have a freedom of treatment and a variety of motive very different from the Assyrian formalism, combined into a whole quite remarkable for its balance and harmony of line. There is nothing so truly decorative in the design of the Assyrian bas-reliefs; there is nothing so free and varied in the design of the less "representative" Assyrian patterns. There is nothing in all Mesopotamian ornamentation that is to me one-half so charming, or so expressive of the best kind of decorative power as these Egyptian examples, where a very natural kind of representation is joined to a very perfect kind of decorative effect.

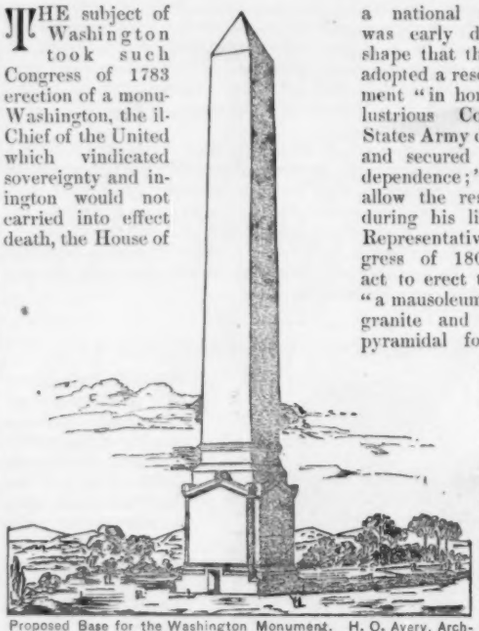
The translation of the next succeeding instalment of Messrs. Perrot & Chipiez's work is already in press. It will deal with the art of Asia Minor, of Phœnicia and of Cyprus, and while it will undoubtedly be of extreme interest to readers in every land, its value will be peculiarly great to us; for we may expect to find in its pages the best criticism that has yet been printed in an accessible shape of the Cypriote relics which fill the Metropolitan Museum in New York.

M. G. van Rensselaer.

THE WASHINGTON MONUMENT.

New York, November 8, 1884.

THE subject of a national memorial to Washington was early discussed, and took such shape that the Continental Congress of 1783 adopted a resolution for the erection of a monument "in honor of George Washington, the illustrious Commander-in-Chief of the United States Army during the war which vindicated and secured their liberty, sovereignty and independence;" but Washington would not allow the resolution to be carried into effect during his life. After his death, the House of Representatives in the Congress of 1800 passed an act to erect to his memory "a mausoleum of American granite and marble in a pyramidal form." But it failed of passage in the Senate, and it was not until 1833 that the monument project assumed definite form, when the Washington National Monument Society made an appeal to the country, and secured $230,000. Work was not begun, though, until 1848, when the site, said to have been originally chosen by Washington, of the present monument was designated by Act of Congress. It includes twenty acres of the government reservation along the Potomac River, and will eventually be a portion of a beautiful park.



Proposed Base for the Washington Monument. H. O. Avery, Architect, New York, N. Y. The present Monument is a simple Obelisk, 555 feet high, and classically proportioned. Finished in 1884.

The Society proceeded with the work of construction, after having laid the corner-stone July 4, 1848, until 1854, when it was compelled to suspend operations on account of its inability to obtain more money. The monument was left at a little way above its foundation until 1878, at which time the Government undertook its completion, under the direction of the United States Corps of Engineers, with the Monument Society as an advisory board. After a large appropriation by Congress, this Joint Commission ordered work to be resumed January 28, 1879. The necessary earth excavations for uncovering the old marble foundation were begun, and two cuts were made beneath the work, on diagonally opposite corners, and speedily filled with concrete; but the removal of 144 square feet of bearing surface from beneath a foundation and shaft 180 feet high and weighing 71,500,000 pounds, was found to give such rapid motion to the Monument that only one cut at a time was made at the remaining angles and opposite sides. The entire mass of new concrete beneath the old foundations is 126 feet 6 inches square, 13 feet 6 inches in depth, making a total depth of 36 feet 10 inches, and extends 18 feet within the outer edge of the old foundation, and 23 feet 3 inches without the same line. The mass contains 7037 cubic yards of Portland cement concrete, of a mixture by volume of one part cement, two parts sand, three parts pebble, and four parts broken stone. This concrete possessed a crushing strength, when seven and one-half months old, of 155 tons per square foot.

The entire work of underpinning was accomplished without causing the slightest crack or the least opening in any joint of that portion of the Monument already described. The area of the original rubble foundation was 6,400 square feet, to which was added 16,002 square feet of concrete, a surface two and one-half times as great, and as the Monument, as now completed, weighs 80,470 tons; this will give a normal pressure on the bed of the foundation of more than 3½ tons to the square foot, which will be increased to a maximum pressure under the action of the wind. The shaft, which is 555 feet high, has a base of 55 feet; it is therefore ten diameters high, with an entasis of one foot in every thirty-four in height. It is faced with white, large-crystal marble, and backed with blue granite; but as the walls increase in height, the proportion of granite diminishes, and at the level of 452 feet, the backing disappears, and the walls from that level to the top are entirely of marble. The settlement of the structure varies at each corner, but the average is 1.7 inches.

The interior of the monument consists of an iron frame, in two

No. 463 American Architect and Building News, Dec. 13 1884

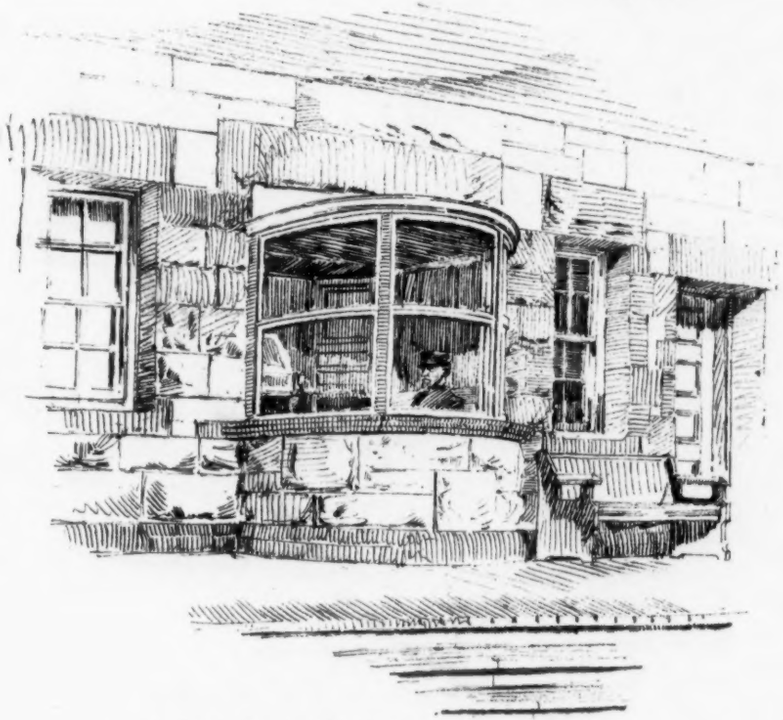
COPYRIGHTED, 1884, JAMES R. OSGOOD & CO.

Chestnut Hill Station on the Boston & Albany R.R.

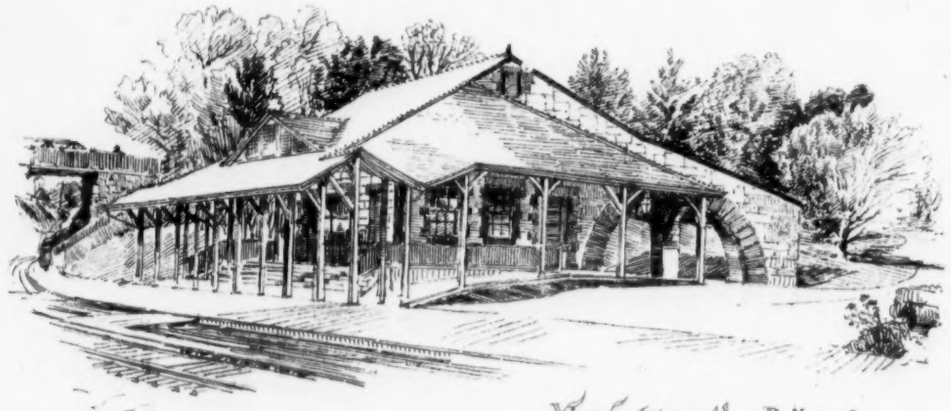
Mr H.H. Richardson: Architect.

Waiting Room.

View from the Drive



Bay Window to Ticket Office



View from the Railroad

Sketches by E.Eldon Deane.

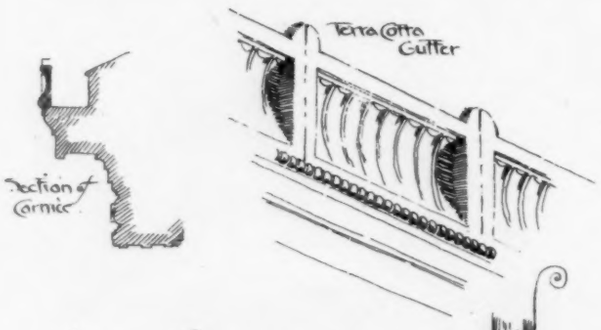
HELIOTYPE PRINTING CO. BOSTON

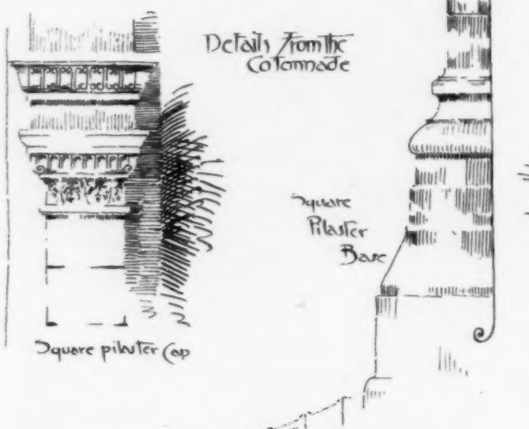
COPYRIGHTED 1884 JAMES R. OSGOOD & CO.

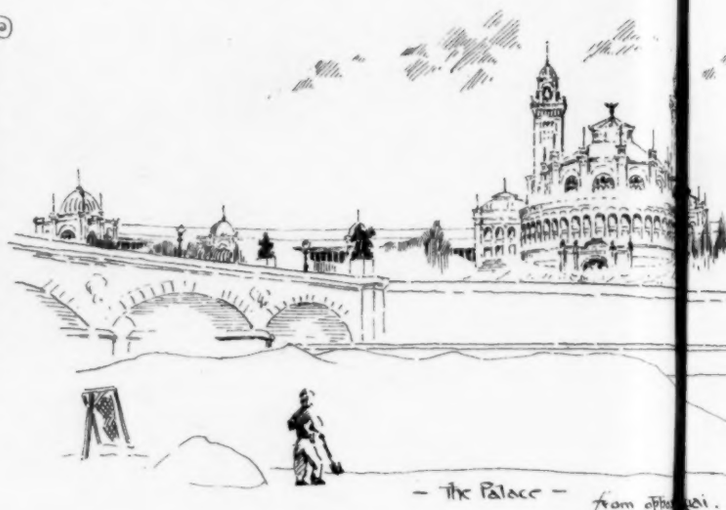
WINDSOR CASTLE.

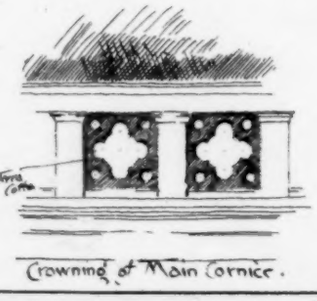
PHOTO-GRAVURE BY THE ALBERTYPE PRINTING CO. BOSTON.

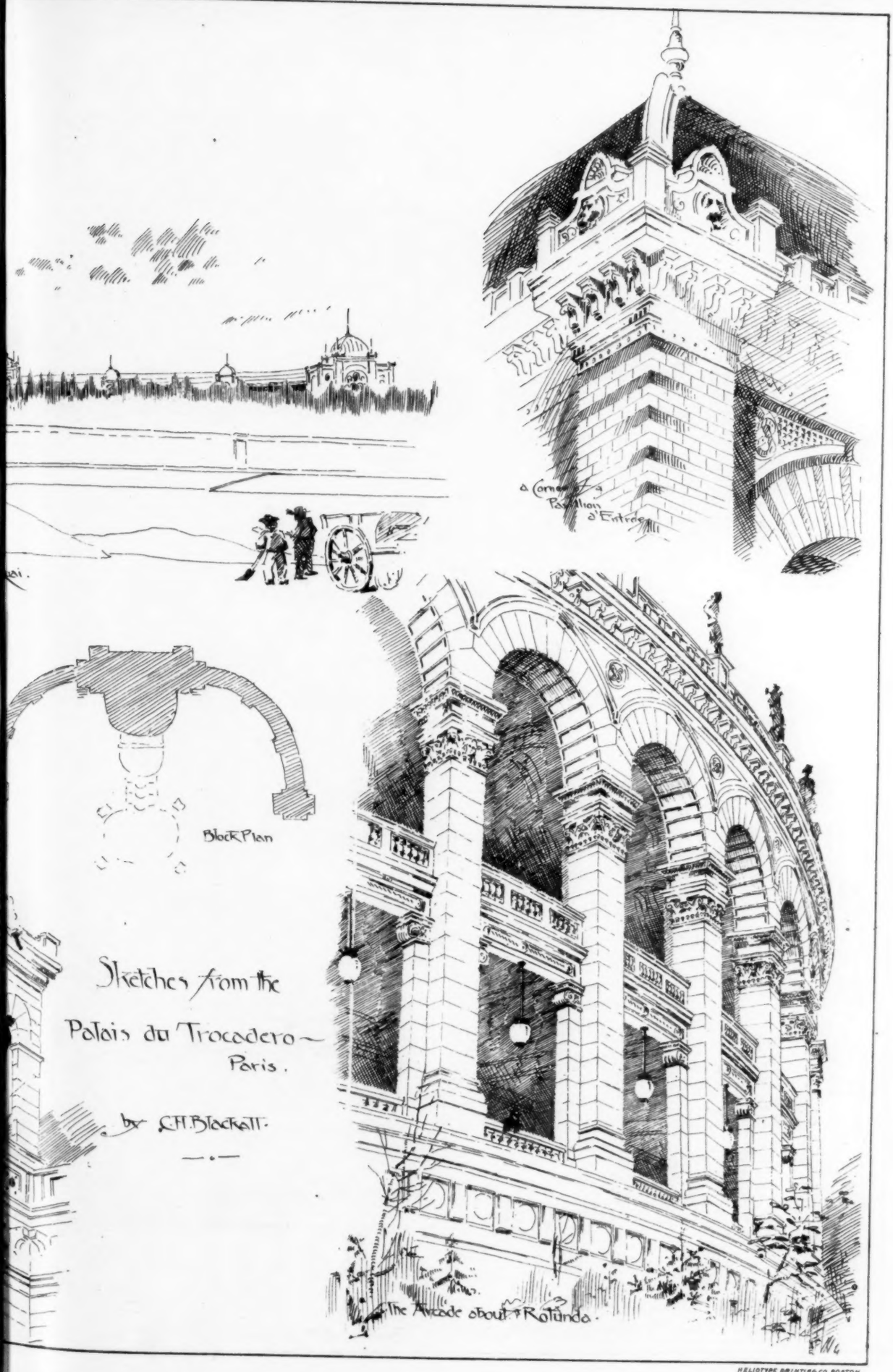
COPYRIGHTED







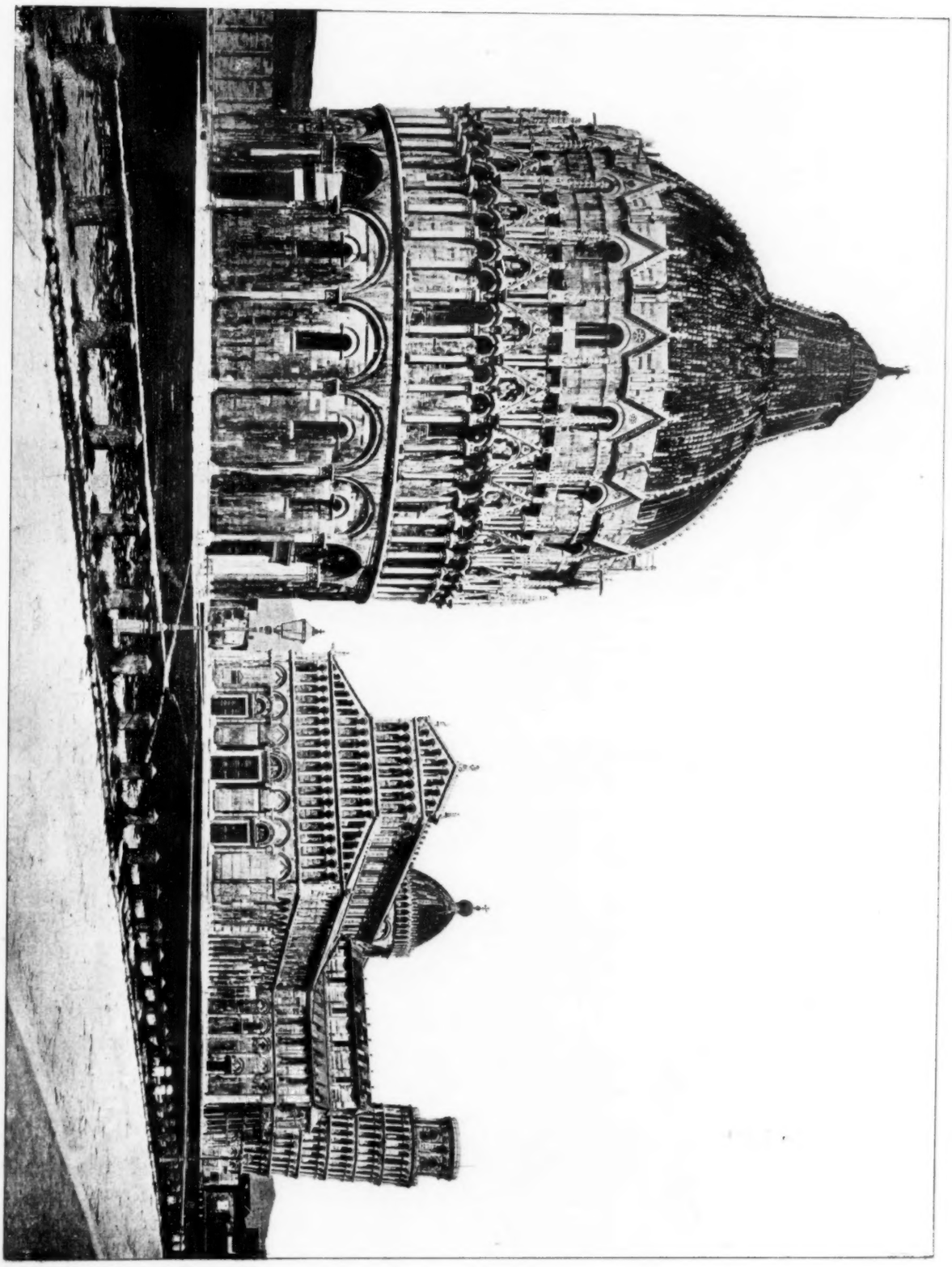



A Corner of Pavillion d'Entrée
Block Plan
Sketches from the Palais du Trocadero — Paris.
by C.H. Blackall.
The Arcade about the Rotunda.

HELIOTYPE PRINTING CO. BOSTON

CATHEDRAL, BAPTISTERY, AND LEANING TOWER, PISA, ITALY.

COPYRIGHTED 1884 JAMES R. OSGOOD & CO.

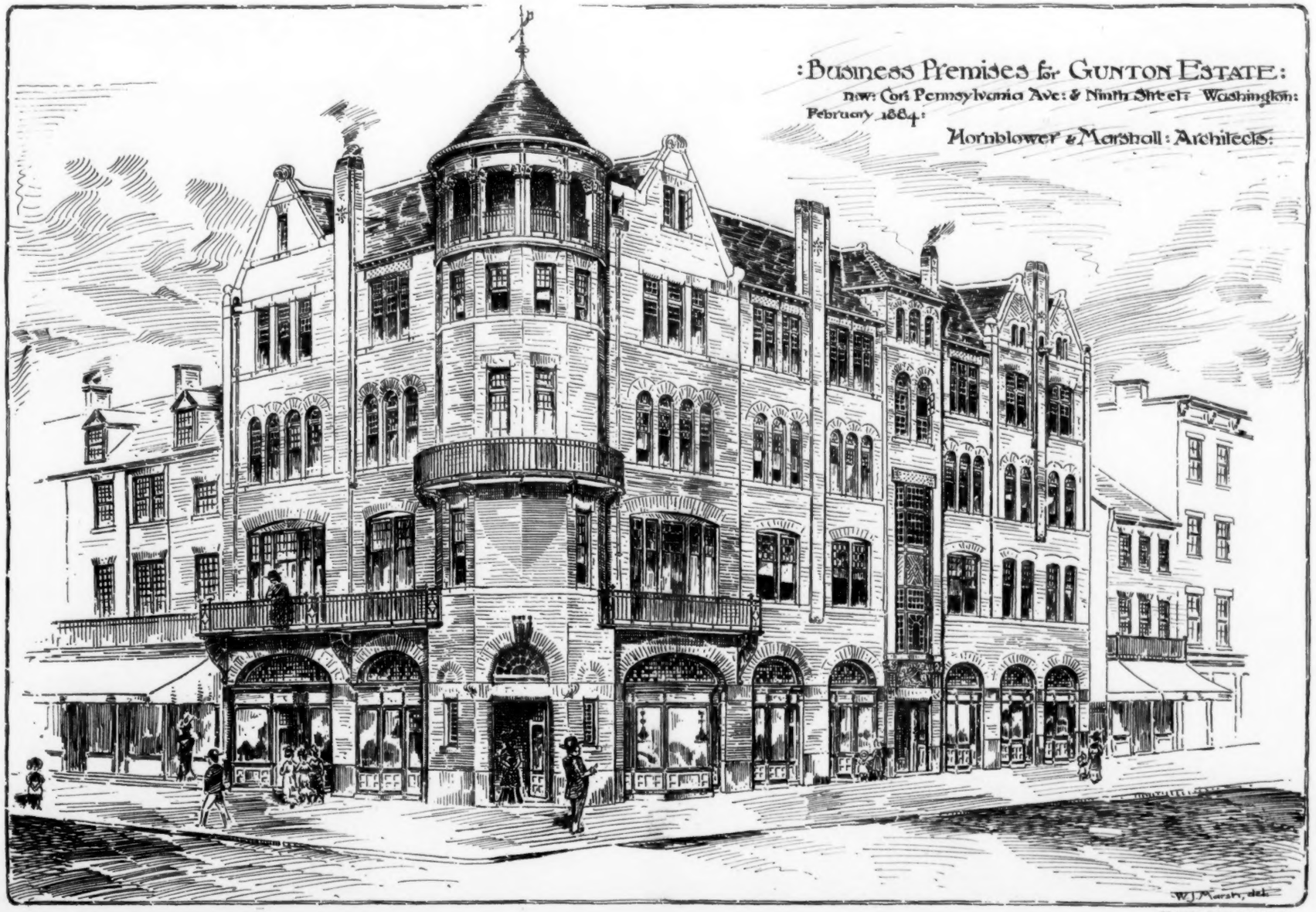


CATHEDRAL, BAPTISTERY, AND LEANING TOWER, PISA, ITALY.

PHOTO-CAUSTIC HELIOTYPE PRINTING CO. BOSTON.

AMERICAN ARCHITECT AND BUILDING NEWS, DEC. 13 1884 No. 463

COPYRIGHTED 1884 JAMES R. OSGOOD & CO


: Business Premises for GUNTON ESTATE:
nw: Cor: Pennsylvania Ave: & Ninth Streets Washington:
February 1884:
Hornblower & Marshall: Architects:
W. J. Murphy, del.

HELIOTYPE PRINTING CO. BOSTON

parts, one of which carries the stairs and landings, the other the elevator machinery; as the work progressed, this was utilized for lifting the stones.

The stair frame-work consists of four wrought-iron Phœnix columns, 7¼ inches in diameter, which are located at the four corners of a square 15 feet 8 inches on a side, and concentric with the hollow well of the monument shaft. At levels of 20 feet, the one above the other, nine-inch beams were passed through the two east and two west columns, and the ends of these beams firmly secured in the north and south wlals of the shaft. These beams formed the inner edges of strong wrought-iron frames, which constitute the landings, the outer edges being made by 9-inch channel-bars, the ends of which are firmly secured in the north and south walls. The landings are thus located along the east and west faces of the well, and are so spaced vertically that any landing on the east wall is 10 feet above the next landing below it on the west wall. These landings are then connected by iron staircases along the north and south faces of the well, the inner carriages of the stairs being bolted into the columns. The elevator-shaft is formed by four Phœnix columns, 6 inches in diameter, placed at the four corners of a square, 9 feet 9½ inches on a side, and concentric with the square formed by the four columns of the staircase frame. These columns are securely fastened and braced to the columns of the staircase. Upon the northwest and southeast columns, the girders and ratchets for the safety-pawls of the elevator are fastened, while upon the top of these columns an iron framework carries the large pulleys for the hoisting-ropes and other minor parts of the mechanism.

During the progress of the work, the eight columns above mentioned were built to the height of 30 feet above the top of the masonry shaft, and firmly tied and braced with vertical and horizontal ties and horizontal braces, making a rigid structure. To each of the four outer columns of this framework a crane arm was attached, which swung over one-quarter of the top of the wall. Each of these arms had a mast 18 feet in height, and a boom 19 feet 6 inches in length, and was supplied with a travelling car and differential hoisting pulleys. By means of this arrangement, 20 feet in height of masonry was added to the walls of the Monument. It would then become necessary to add 20 feet to the height of the iron frame, and to move the elevator and stone-setting machinery to its top, when another 20 feet of wall could be built. This alternation of building first 20 feet of the iron frame and 20 feet of the walls was continued to the top of the structure.

In 1883, the appropriation of 1878 having been exhausted, Congress devoted another large sum of money, sufficient to finish the monument, including the interior staircase and platform, the masonry of the well, the paving of the floor, and the passenger-elevator, which has a capacity for a load of six tons, with a large factor of safety, and can easily accomplish two trips an hour. No account was taken, though, in this last appropriation, for any embellishment of the doorways, the terrace and approaches to the structure, the insertion in the walls of the presentation stones, the final disposition of the boiler-house, or of appliances for lighting the interior of the shaft. The monument has already cost $1,250,000, and if these are properly carried out, another quarter of a million will be necessary.

It was always intended to have some finish at the base of this obelisk, and to this effect Congress approved an idea of Mr. Robert Mills, an American sculptor, which changed the monument into a sort of Pantheon, 100 feet high, with a colossal statue, over its portico, of Washington in a chariot, with six horses driven by Victory; but this was finally abandoned, and later the Joint Commission approved a design by another sculptor — Mr. Story — by which the entire obelisk was to be embellished by an ashlar covering, of porticos, cornices, pilasters and niches, changing the character from an obelisk to a campanile, but as this would have cost more than three-quarters of a million, Congress rejected the idea. Many designs were proposed and submitted, but it was finally decided to finish the monument as a simple obelisk, and as such it exists and remains, a fac-simile of the old Egyptian ones, barring the hieroglyphics, and as classically proportioned. Of the hundreds of obelisks and monoliths of more modern times, more than nine-tenths have embellishments at the base, and this, the largest obelisk and highest monument in the world, would also look better with something for a base finish, however simple.

HENRY O. AVERY.

THE ILLUSTRATIONS.

CATHEDRAL, BAPTISTERY AND LEANING TOWER, PISA, ITALY.

THE cathedral at Pisa, with its baptistery, campanile, and the *campo santo* or cemetery, are a group of buildings of more curiosity than any four edifices in the world, and the more so from being so strongly marked with the distinguishing features of the Byzantine and Romanesque styles. The cathedral, whose architect was Buschetto of Dulichio, a Greek, was built in the beginning in the eleventh century. It consists of a nave, with two aisles on each side of it, transepts and choir. Its bases, capitals, cornices and other parts were fragments of antiquity collected from different places, and here with great skill brought together by Buschetto. The plan of the church is a Latin cross; its length from the interior face of the wall to the back of the recess is 311 feet, the width of the nave and four side aisles 106 feet 6 inches, the length of the transept 237 feet 4 inches, and its width, with its side aisles, 58 feet. The centre nave is 41 feet wide, and has twenty-four Corinthian columns, twelve on each side, all of marble, 24 feet 10 inches high, and full 2 feet 3 inches in diameter. From the capitals of these columns arches spring, and over them is another order of columns, smaller and more numerous, from the circumstance of one being inserted over the centre of an intercolumniation below, and from their accompanying two openings under arches nearly equal to the width of such intercolumniations. These form an upper gallery, or triforium, anciently appropriated to the use of females. The four aisles have also isolated columns of the Corinthian order, but smaller, and raised on high plinths, in order to make them range with the others. The transepts have each a nave and two side aisles, with isolated columns, the same size as those of the other. The soffit of the great nave and of the transepts is of wood, gilded, but the smaller ones are groined. The height of the great nave is 91 feet, that of the transepts about 84 feet, and that of the aisles 35 feet. In the centre nave are four piers, on which rest four large arches, supporting an elliptical cupola. The church is lighted by windows above the second order of the interior. The edifice is surrounded by steps. The extreme width of the western front, measured above the plinth moulding, is 116 feet, and the height from the pavement to the apex of the roof is 112 feet 3 inches. The façade has five stories, the first whereof consists of seven arches, supported by six Corinthian columns and two pilasters, the middle arch being larger than the others; the second has twenty-one arches, supported by twenty columns and two pilasters; the third is singular, from the façade contracting where the two aisles finish, and forming two lateral inclined planes, whence in the middle are columns with arches on them as below. The columns which are in the two inclined planes gradually diminish in height; the fifth story is the same, and forms a triangular pediment, the columns and arches as they approach the angle becoming more diminutive. The two exterior sides have two orders of pilasters, one over the other. The roof of the nave is supported, externally, by a wall decorated with columns, and arches resting on their capitals. The whole of the building is covered with lead. The drum of the cupola is externally ornamented with eighty-eight columns connected by arches, over which are pediments in marble, forming a species of crown.

Dioti Salvi, whose birthplace even is unknown, commenced, in 1152, the baptistery of Pisa, and after eight years completed it. It is close to the cathedral of the place, and though on the wall of the inner gallery there be an inscription, cut in the character of the Middle Ages, "A. D. 1278, ÆDIFICATA FUIT DE NOVO," and it may be consistent with truth that the edifice was ornamented by John of Pisa, there is nothing to invalidate the belief that the building stands on the foundations originally set out, and that for its principal features it is indebted to the architect whose name we have mentioned. It is 100 feet in diameter within the walls, which are 8 feet 6 inches thick. The covering is a double brick dome, the inner one conical, the outer hemispherical. The former is a frustum of a pyramid of twelve sides. Its upper extremity forms a horizontal polygon, finished with a small parabolic cupola, showing twelve small marble ribs on the exterior. The outer vault terminates above, at the base of the small cupola, which stands like a lantern over the aperture. From the pavement the height of the cupola is 102 feet. The entrance is by a decorated doorway, from the sill of which the general pavement is sunk three steps round the building; the space between the steps and the wall having been provided for the accommodation of the persons assembled to view the ceremony of baptism. An aisle or corridor is continued round its interior circumference, being formed by eight granite columns and four piers, from which are turned semi-circular arches, which support an upper gallery; and above the arches are twelve piers, bearing the semicircular arches which support the pyramidal dome. On the exterior are two orders of Corinthian columns engaged in the wall, which support semicircular arches. In the upper order the columns are more numerous, inasmuch as each arch below bears two columns above it. Over every two arches of the upper order is a sharp pediment, separated by a pinnacle from the adjoining ones; and above the pediments a horizontal cornice encircles the building. Above the second story a division in the compartments occurs, which embraces three of the lower arches; the separation being effected by piers, triangular on the plan, crowned by pinnacles. Between these piers, semicircular-headed small windows are introduced, over each of which is a small circular window, and thereover sharp pediments. Above these, the convex surface of the dome springs up, and is divided by twelve ribs, truncated below the vertex, and ornamented with crockets. Between these ribs are a species of dormer window, one between every two ribs, ornamented with columns, and surmounted each by three small pointed pediments. The total height is about 179 feet. The cupola is covered with lead and tiles; the rest of the edifice is marble.

The extraordinary campanile, or bell-tower, near the cathedral, was built about 1174. It is celebrated from the circumstance of its of its overhanging upwards of thirteen feet, a peculiarity observable in many other Italian towers, but in none to so great an extent as in this. There can be no doubt whatever that the defect has arisen from bad foundation, and that the failure exhibited itself long before the building was completed; because, on one side, at a certain height, the columns are higher than on the other, thus showing an endeavor on the part of the builders to bring back the upper part of the tower to as vertical a direction as was practicable, and recover the situation of the centre of gravity. The tower is cylindrical,

50 feet in diameter and 180 feet high. It consists of eight stories of columns, in each of which they bear semicircular arches, forming open galleries round the story. The roof is flat, and the upper story contains some bells. — *Gwilt's Encyclopædia of Architecture.*

WINDSOR CASTLE, WINDSOR, ENGLAND.

It would be hard to say which were more familiar to American ears and eyes, Windsor Castle or the Tuileries — homes of royalty both, and each the shrine of devout pilgrims. But one has passed away, the victim of unreasoning socialism, while the other bids fair to last for ages, the pledge of which lies in its retired situation remote from the attacks of passing passions, enduring a calm and placid existence as undisturbed as the narrow Thames flowing beside it. Here we have dignity and impudence closely associated, as ever: the railway pointsman's box in the foreground, temporary and utilitarian to the last degree, while beyond it rises with all the pomp of a royal residence the favorite home of a powerful, sovereign, a very centre of romantic interest. This juxtaposition in a way typifies the encroachments that energy and brains are making on the realms of traditions. Windsor was purchased from the monks of Westminster Abbey, by William the Conqueror, who built the circular keep, or castle proper. Between this time and the reign of George IV, buildings were added to the group, enlarged, extended, altered. Under this monarch Sir Jeffrey Wyattville made extensive restorations, and under Queen Victoria still more elaborate changes were made which cost in all about four-and-a-half million dollars. Amongst other things the chapel built by Henry VII as a mausoleum for himself, before he finally chose Westminster Abbey for his resting place, adjoining St. George's Chapel has been rehabilitated as a memorial chapel to the Prince Consort, perhaps the most consistent and complete of the memorials which the Queen has scattered over the land. The restorations were made by Sir G. G. Scott. The view shows the State Apartments of the Queen, which can be seen by tourists during the absence of the royal family.

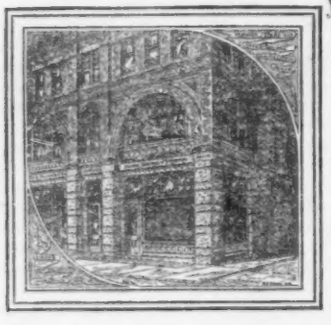
STATION OF THE BOSTON & ALBANY R.R., CHESTNUT HILL, MASS. MR. H. H. RICHARDSON, ARCHITECT, BROOKLINE, MASS.

BUSINESS PREMISES FOR THE GUNTON ESTATE, WASHINGTON, D. C. MESSRS. HORNBLOWER & MARSHALL, ARCHITECTS, WASHINGTON, D. C.

SKETCHES FROM THE PALACE OF THE TROCADERO, PARIS, FRANCE, BY MR. C. H. BLACKALL.

FIFTY-FIFTH EXHIBITION AT THE PENNSYLVANIA ACADEMY.

PHILADELPHIA, November, 1884.



The Academy Exhibition opened with a discouragingly meagre exhibition. I do not know that the average of merit is below what it usually is, but the exhibition is very small. Water-colors, etchings, wood-engravings, pen-and-ink drawings, and architectural designs are all included, and yet the whole amount of entries foots up less than three hundred and fifty, and as very many of the pictures are quite small, the effect is certainly not imposing, and the comparison which is inevitable between this and the displays of the last two or three years in these same spacious galleries is not reassuring.

With the exception of Mr. Charles Sprague Pearce's two pictures, Mr. W. P. W. Dana's one, Mr. Alexander Harrison's marine, and a very pretty picture by Miss Ellen K. Baker, there is nothing to speak of from Paris, and one wonders what is the matter, that the source from which the Academy was wont to draw so much interesting material, and in connection with which everybody thought it was doing such good work, has all at once failed.

Then the home painters are almost all disgruntled, and have not exhibited, so that the collection has had to be eked out with loans of "old familiar faces," some of which I am sorry to say never had anything to do with American art.

One of Thomas Hill's pictures of the Yosemite Valley, one of the ponderous performances that belong to the Bierstadt epoch in American art — although, of course, it is better than anything that Bierstadt ever painted — is hung in the most conspicuous position in the exhibition, the place which is usually regarded as the place of honor, and has been awarded the Temple silver medal. These medals which went begging last year — young Trego, you know, refused to receive his, and brought suit against the Academy for the $3,000 which constituted the first prize in that memorable competition — have found "takers" this year, and confer, I have no doubt, a great deal of honor. The gold medal goes to George W. Maynard, for his portrait of Frank D. Millet in "war correspondent" garb, a very good picture which everybody must have seen (it was exhibited in Boston five years ago, if I am not mistaken), and the silver medal to Mr. Hill as just stated.

These medals are to be given annually hereafter, the gold medal for the best figure picture exhibited, and the silver one for the best landscape or marine. The awards this year, and there are several, strike the unprejudiced observer — the uninitiated, I mean, for I would not for the world insinuate that anything like prejudice exists anywhere — as very funny. There wasn't such a bewildering amount of excellence to choose from, I know, but it seems to me the committee might have come a little nearer the mark than this. Charles Sprague Pearce's very beautiful "The Prayer," is here from the last *Salon*, and so is Mr. Caliga's "A Flaw in the Title," an extremely good picture as it seems to me, containing five figures managed with a great deal of feeling, and painted with a great deal of skill. Not that I have anything to say against Mr. Maynard's portrait, I think it is first rate: but then the medal was offered for a "figure picture," and if the qualities which go to make up so important a composition as this of Mr. Caliga's for instance, were to be recognized at all, there could certainly be no very serious comparison between the two.

Then in landscape there are three or four very lovely things. Bolton Jones's "Early Spring," is very choice, and Mr. Charles Henry Eaton has two landscapes of great brilliance and beauty; the larger one, a "View at Lakeview," is certainly superb. In marine pictures nobody now-a-days does anything better than the strong, free painting of Alexander Harrison, and he is represented by the best piece of work (except in figures), that he has ever shown here. He calls it "Evening," and it represents with wonderful vividness that delicious moment in a summer afternoon when

"The moon is up, and yet it is not night."

The picture is full of light, which does not come from the full moon which has just arisen. The sea comes pouring in in magnificent fashion to the observer's very feet. It is all freshness and vigor, and — well it ought to have received the silver medal.

In the giving the prizes which necessarily go to residents or to students of their own school the Academy's committee is hardly more happy than in the case of the Temple medal. The Charles Toppan prizes of $200 and $100 respectively, are for those who have studied in the Academy for at least two years, one of which must have been the year preceding the exhibition of which the prize is awarded. The first prize goes this year to Mr. Charles A. Fromuth, for a picture containing two figures, entitled "The Soldier's Widow." Mr. Fromuth is a young man, and is evidently a faithful and hard-working student: it is to be hoped that the encouragement given in this prize is well deserved, and will do good, but the less that is said about the picture the better.

The second prize has been awarded to Miss Ellen W. Ahrens, for a portrait-study, three-quarters length, of a young girl. It is a good, solid, simple piece of work, and deserves much praise, and the award which it has received.

The Mary Smith prize of $100 for the best picture by a lady artist resident in Philadelphia, has been awarded to Miss Lucy D. Helme's full-length study of a sitting figure, a woman dressed in some soft, yellow Eastern stuff, entitled "Petrona." The picture is very nice in color, and except for its entire absence of *quality*, the flesh looking like mahogany, and the dress like feathers, it is very good *as* a study. As a picture it is not to be compared with a "Portrait of a Child," by Miss Alice Barber, which hangs opposite it, the overlooking of which by the committee is one of those unaccountable things at which we can only wonder. "Petrona" has been bought for the Temple collection.

Miss Barber's picture is large in treatment, exquisite in color, eminently truthful to the character of the subject, and is, take it altogether, one of the very best things from any hand, that is shown in the exhibition.

Other students of the Academy, and those who have received their training here in very recent years, have sent creditable work.

Some heads by Miss Cecilia Beaux are very beautiful, one of them is in water-color, a department in which there is not a great deal of important work, although Mr. F. Childe Hassam's three sketches of water views are very nice, the "Grey Morning at Venice," is I think, the best. Very pretty work also, is shown by Mr. Edmund H. Garett, and by Mr. William Graham. Mr. Sidney R. Burliegh, of Providence, sends the largest and most imposing of the water-colors, "Close of a Heavy Day," the subject a bit of rocky coast, and a stormy sea. To return to the oil paintings, Mr. Frank L. Kirkpatrick exhibits this year the best work he has done since he made a decided hit with his "The Greek Rhyton in the Museum at Seville" three years ago. This year along with "A Temple of Baal," which is not so good, he exhibits a very beautiful picture called "In the Museum." It is quite free from the looseness of handling which has been noticeable in a good deal of his work, the figures, of which there are several, being beautifully drawn, and the whole painted with much refinement. You have to accept Mr. Kirkpatrick's point of view, of course; his determination to make the work decorative whatever else it is, and his persistent use of a scheme of color which all the wise critics told him long ago was false and wrong. It is a mannerism certainly, but the effect is so pleasing, that I think the plucky young painter deserves much more credit than criticism. This picture has been purchased for the Temple collection also.

Mr. Theodore Wores, of San Francisco, is represented by a "Chinese Actor," a scene in the Chinese theatre at San Francisco, which is fresh and unhackneyed enough in subject certainly, and which contains some first-rate painting; the unimpassioned gestures of the principal figure, and the stolidity of the musicians who are crouched on the ground behind him, contrasting so vividly with the violence of the color, and the strained grotesqueness of the forms in his dress; the whole so strangely different from everything which we are accustomed to associate with dramatic interest, but all very characteristic of the Chinese, are admirably rendered.

Mr. W. P. W. Dana's "Seaside Harvest, Brittany," a spirited group of horses harnessed to a cart which is loading with sea-weed, is very strong and effective, the dull and patient donkey who does duty as a leader contrasts as well with the nervous horses with whom he has to pull, as his dark body does with the foamy sea against which it is relieved.

Mr. Thomas Allen's "The Maplehurst Herd," is a large and very strong cattle picture that deserved better treatment than it has received at the hands of the hanging-committee, who have mercilessly "skied" it.

In one respect the exhibition is more of a success than a good many of its predecessors. A good many sales are recorded. Let us take some comfort from that, and hope that enough good encouragement may be given to contributors in this way to make up for the blunders of last year's competition, which has had the effect evidently of alienating for this year most of the best painters at home as well as abroad.

L. W. MILLER.

UNDERGROUND TELEGRAPH-WIRES.

AT the three hundred and twenty-second meeting of the Society of Arts, held November 13, W. W. Jacques, electrician of the American Bell Telephone Company, read a paper on "Underground Telegraph Wires."

The first telegraph line constructed in this country, from Baltimore to Washington, in 1843, was intended to be laid underground, and the first nine miles were so laid. Four copper wires were each wound with cotton soaked in shellac, and the whole drawn into a lead tube. This tube was laid in a trench by the side of the railroad. Hardly was the section completed, however, when water found its way into the joints, destroying the insulation, and the conductors failed. They were accordingly replaced by wires strung on poles, and the rest of the line was constructed in this way. In England a similar line was built for a distance of thirteen miles along the Great Western Railway, which failed in exactly the same way as the American line, and was soon replaced by a pole line. The same thing occurred at various places on the Continent, and thus, although the first idea of telegraph engineers was to have underground lines, they were obliged to resort to pole lines. In Europe there has always been a strong desire to have a part of the electric wires under ground, on account of their safety, secrecy and reliability. After the introduction of gutta-percha, in 1846, many systems were tried, and the result is that there now exists a successful and durable system of underground telegraph-wires connecting the principal cities of Germany and France. In many European cities the lines are carried under ground as far as the outskirts, and in Paris not only all the telegraph lines, but also those for electric lights, telephones and other purposes, are carried through the sewers.

These systems, however, have cost from ten to twenty times as much as similar overhead lines, and there are many more miles of the latter than of underground lines; while in Paris, which is the only city in the world having a complete underground system, the great size of the sewers affords unusual facilities for running wires. Moreover, it has been found that, for delicate and quick-working apparatus, such as automatic telegraphs, polarized relays, and especially the telephone, long underground lines are far less efficient than pole lines. Apart from the difficulty of securing good insulation, there are two reasons for this fact; viz., (1) the *retardation* which takes place when the conductor is brought near the earth, which limits the speed of working of the apparatus, or, in the case of the telephone, confuses and destroys the signals altogether; and (2) *induction*, which is noticed when two or more wires are run close together, as they must be when under ground, and which causes a message sent over one wire to be received on all the others. With telephone-wires this is noticeable on wires as short as one thousand feet. Steady currents, like those for electric lights, are, of course, unaffected by either of these phenomena.

The history of the attempts which have been made in the direction of underground wires proves that for long lines between cities, in this country, pole lines, which can be easily built and repaired, and where the wires are not subject to the effects of retardation or induction, are decidedly superior to underground lines. Between 1847 and 1870, all the systems which had been tried had proved complete failures. Since that time, however, in England, Germany and France, several lines have been built that have continued to work successfully. The English system used until recently between Liverpool and Manchester, was constructed by laying iron or stoneware pipes from one to two feet below the ground, and drawing in the cable of gutta-percha covered wires. The route was selected through a marshy section of country, so that the pipe was almost constantly filled with water, so as to preserve the gutta-percha. In the present German system, which dates from 1875, the cable is composed of seven copper wires, each coated with two layers of gutta-percha and two of Chatterton's compound, and the whole covered with an armor of galvanized-iron wires; this is laid in a trench by the roadside. The cost of the system was nearly twenty times that of a well-built pole line. The present French system was begun in 1880, and consists of cables of gutta-percha covered wires, which are drawn into iron pipes three or four inches in diameter, and buried along the side of the road. Although all these systems are now in successful operation, they are far less efficient than pole lines of the same length would be. The speed of working is limited, and the use of the telephone over considerable distances is impossible.

The speaker then gave an account of some experiments he had made on copper wire, insulated with gutta-percha, laid under ground, with a metallic circuit instead of the usual ground return, and in all cases covered. These experiments had been made on the Paris telephone-wires, the French Government wires between Paris and Orleans, the line between Paris and Soissons, and several German lines. The distance talked over in miles varied from twenty to eighty-five miles. These experiments had led Dr. Jacques to the discovery of the empirical law that if the product of the total resistance in ohms by the total capacity in microfarads was less than about 18,000, perfectly good conversation was possible, while if it exceeded that number, talking was more difficult, and in many cases impossible.

Within our large cities the problem is somewhat different, however, from that of connecting two cities with each other. The number of wires has of late been rapidly increased, and if run on poles, they disfigure the streets, interfere with the operations of firemen in case of fire, and cause annoyance to tenants and house-owners. These disadvantages have led many to ask whether the wires cannot be buried, at least in the cities.

In Paris, all wires are carried under ground in the sewers; in London, telegraph-wires are so carried from the central office to many of the branch offices; and in many German and Austrian cities the telegraph-wires are so carried to the outskirts; but in European cities, as in America, most of the telephone and electric-light wires, and a majority of the telegraph-wires also, are still carried on poles or over house-tops. In Paris, the telephone-wires are protected from induction and retardation by using, instead of a single wire, two wires twisted together, forming a metallic circuit, which obviates the difficulties referred to, though doubling the cost of the wire. It is thus *technically* possible to place all of the wires in a city under ground, but the cost is enormously increased, being five times as much as a pole line, even in Paris, where no separate piping or chambers to contain the wires are necessary. To put such a system as one of our telephone exchanges under ground would place the cost of the instruments entirely out of reach of the subscribers. While it thus seems impracticable to put all of the wires underground in cities, much may be done by putting the heavier lines, where a large number of lines run side by side for a considerable distance, under the streets. Our American telegraph and telephone companies have recognized this fact, and several underground lines have recently been constructed by them. The American Bell Telephone Company has two short lines of such wires in the business section of Boston, about a quarter of a mile long each. On account of the short distance, it was considered best to use single-line service, trusting that the induction and the retardation would not be serious. The system is constructed by laying eight wrought-iron pipes, three inches in diameter, side by side in two rows, about four feet below the surface. At each street-corner a brick chamber is built, large enough to admit a man, and with a cover flush with the street. The cables run out from the basement of the central office, through the pipes and up the side of buildings to the roof, from which they spread out to the subscribers by means of ordinary overhead lines.

The speaker then showed samples of the different kinds of cables that are in use, and referred briefly to the underground lines in use in Washington, Pittsburgh and Chicago.

At the conclusion of Dr. Jacques's paper, Professor Cross referred to the conditions necessary for the successful operation of underground wires; viz., high conductivity and larger section of the wire, a thick coating of a good insulating material, and low specific inductive capacity of this insulator.

Professor A. E. Dolbear said that what Dr. Jacques had said had shown that the use of any very considerable length of underground wire would be almost impossible, or at least impracticable. There was a great difference between telegraph and telephone wires as regards the difficulties met with, and with the telephone there was no advantage gained in increasing the strength of the battery beyond a certain point; neither could such increase of strength do anything in the way of obviating the difficulties of retardation or induction. Only a weak current was necessary for telephonic purposes, and no increase above what was necessary to do the real work of transmitting the vibrations would be of any advantage. There was also a great difference, in telephonic work, in working at different ends of the line.

Professor Cross referred at some length to the effect of the electric capacity of the conductor, and the deformation of the electric wave or impulse resulting therefrom. The greater the capacity of the cables, the greater its effect in flattening the wave, thus tending to confuse rapid signals, and rendering a slower rate of transmission necessary in telegraphy. When the telephone is used, as the rate of change of the electric pulses caused by the sound-waves cannot be altered, confusion and indistinctness result. It is universally conceded now that large wires are the best, and they are now universally used in submarine cables, although at the time when the first Atlantic cable was proposed there were two parties among telegraph engineers, one advocating the use of large wires, and the other the use of small ones. A difficulty which has been experienced in telephone-wires arises from the fact that strong pulses travel faster than weak

ones. The speaker had made some experiments on this point, with the experimental cable, five miles in length, laid near Attleborough by the American Bell Telephone Company. He had found that the sounds of short steel bars of very high pitch could be transmitted readily, even when their number of vibrations was far above the most rapid vibrations that ever occur in articulate speech, and through circuits in which the indistinctness due to electrical retardation was very decidedly manifested. From this he inferred that with intense sounds the change in the cable was abundantly rapid and sufficiently strong to affect the telephone receiver, even when the capacity was very great, and that the indistinctness probably arose in great part from the overlapping of the electric pulses, caused by the stronger ones overtaking and fusing with the preceding weaker pulses.

After some further discussion, the meeting was adjourned.

George F. Swain, *Secretary.*

ARCHITECTURAL SCHOOLS.

Milwaukee, Wis., December 6, 1884.

To the Editors of the American Architect: —

Dear Sirs, — I am a draughtsman, and have been connected with some of the leading architects of the West for the past two years; I have acquired a fair knowledge of architecture, and skill in general design; but being desirous of obtaining a more thorough training in architectural and decorative design, modelling and water-color drawing, I would solicit your advice as to the most efficient means of reaching this end. What course would you point out to a young man of limited means, who has resolved to devote about two years to earnest study, in the above-mentioned branches; what are the conditions on which students are admitted to an art school, which you might propose; and how great would the annual expenses be which instruction, etc., at such a school will involve? An early answer through your journal would oblige,

Yours truly Subscriber.

[The best way to obtain the instruction which "Subscriber" desires is to enter some good architectural school, such as exists in connection with Columbia College, New York City; Cornell University, Ithaca, N. Y.; the Illinois Industrial University, at Champaign, Ill., or the Massachusetts Institute of Technology, in Boston. All of these give instructions in architectural drawing and design, and water-color drawing and color decoration are taught in one or two, and perhaps in all. We do not know whether modelling forms a part of the course in any, although it would be a very desirable feature.

The conditions of admission to these institutions, with the cost of tuition, and other particulars, may be learned by addressing the Secretary of any of them. — Eds. American Architect.]

NOTES AND CLIPPINGS.

Anecdote of an Italian Sculptor. — "One day, in the studio of Magi, I and another young man were modelling together a man's *torso* which had been cast from nature. A friend of Magi, a painter, as he passed by us, paused, and, after looking at our two copies, said, turning to my rival and patting him gently on the shoulder, 'I am delighted; this is an artist!' Then turning to me with an expression of regret, he said, '*A rivederla.*' My good reader, do you think that made me despair? No, by the Lord! I tell you rather that these words were seared upon my brain as with a red-hot iron, and there they still remain, and they did me a great deal of good. The professor who spoke them (yes, he was a professor) three years afterwards embraced me in the Accademia delle Belle Arti, before my 'Abel.' My rival is perfectly sound in health, and is fatter and more vigorous than I am, but he is not a sculptor. So, my dear young artist, courage!" — *From the Autobiography of Giovanni Duprè.*

From London to Bombay by Rail. — There is a proposition to build a continuous line of railway from London to Bombay, a distance of about 5,000 miles. The line would cross into Africa at Gibraltar, and from Tangiers connect with lines already in operation in Algeria, across Morocco via Tunis and Tripoli to Cairo, thence by way of the Isthmus of Suez down the River Euphrates and along the Persian Gulf shore to a connection with the Indian system of railways which runs to Bombay. The project has been devised by a joint commission of English and French engineers, and it will be a continuous land line from London, excepting the crossing of the Straits of Dover and Gibraltar. When it is completed America will be compelled to get Gould and Vanderbilt to combine long enough to build a railway line to South America via the Isthmus of Panama, in order that the new world may not be eclipsed by the old. — *Philadelphia Press.*

A Chef de Cuisine's Tombstone. — The question of tombstone inscriptions is very important for the public in Paris. There exists a permanent committee, composed of cemetery inspectors, whose special permission is necessary before an inscription can be placed on a tombstone. The inscriptions themselves are often a source of trouble and anxiety to heirs and executors, inasmuch as the wording laid down by a testator in his will is sometimes of such a nature that the committee refuse to sanction its reproduction on his tombstone. A case in point arose last month, when an old man of seventy-five, Felix Durijet, once a great celebrity in the culinary art, died in Paris. He had been assistant to the head-cook of Louis Philippe, and afterwards chief of the famous Frères Provencaux Restaurant, in which establishment he amassed wealth, which was further increased by successful speculations on the Bourse. Instead of the usual headstone to his grave, he required of his heirs that they should erect a marble column, merely inscribed with his name, and supporting a frame containing a movable board. "Every day," said the will, "my heirs shall affix on said board, and in a legible manner, a recipe for the kitchen. For this purpose I leave a list of 365 recipes, which will be found in my cash-box. In this manner, while paying a visit to the graves of relatives, people desirous of acquiring information may obtain it in the cemetery." So far the clause had nothing very terrible about it; but the following rider threw the heirs into a cold perspiration: — "Should my heirs fail to carry out said clause, the whole of my estate shall revert to the public charities." The Committee on Inscriptions unanimously rejected the "broken column surmounted with the frame containing a recipe for each day," and the notary intrusted with the execution of the will refused to put the heirs in possession of their inheritance. The latter had nothing left but to submit the case to the courts. It will soon be before the civil tribunal.—*Philadelphia Bulletin.*

A Gypsum Pueblo, Sonora, Mexico. — Remarkable remains have been found on a hill or mountain four leagues south of Magdalena, in Sonora. The hill is about seven hundred feet high, and half-way up there is a layer of gypsum, which is as white as snow, and may be cut into any conceivable shape, yet sufficiently hard to retain its shape after being cut. In this layer of stone are cut hundreds upon hundreds of rooms, from six by ten to sixteen or eighteen feet square. So even and true are the walls, floors and ceilings, so plumb and level, as to defy variation. There are no windows in the rooms, and but one entrance, which is always from the top. The rooms are but eight feet high from floor to ceiling; the stone is so white that it seems almost transparent, and the rooms are all dark. On the walls of these rooms are numerous hieroglyphics and representations of human beings cut in the stone in different places, but strange to say, all the hands have five fingers and one thumb, and the feet have six toes Charcoal is found on the floors of many of the rooms; implements of every description are to be found. The houses or rooms are one above the other, two, three or more stories high, but between the stories there is a jog or recess, the full width of the room below, so that they present the appearance of large steps leading up the mountain. — *Chihuahua Enterprise.*

To prevent Elevator Accidents. — One of the most severe trials ever made to test the safety of elevators was undertaken by Mr. John Hodges, on the 20th inst., at a house on Madison Avenue and Fifty-first Street, belonging to Mr. E. D. Adams, of the firm of Winslow, Lanier & Co. The car was allowed to fall *one hundred and one times*, and not the least injury resulted therefrom to either the occupant or the elevator, Mr. Hodges riding therein at every trial. On a former occasion we have alluded to this safety appliance as being a decided departure from the contrivances now in use, the invention consisting of movable iron dogs a few inches apart, which fall out under the car the moment it passes them. The car can only descend by means of buffers, or shoes, which are kept in position by a light weight, and these push the dogs in and allow the car to come down, provided everything is working in its normal condition, but the instant a fall takes place, the relation between the car and weight is disturbed, and the buffers fail to push the dogs in, consequently the car rests thereon. The fact that this invention has withstood such extraordinary tests — it having been tried seventy-eight consecutive times at Messrs. Millers' factory, 349 West Twenty-sixth Streets a few months ago — justifies the good opinion we entertained for it, and we predict for the inventor a general introduction of his safety appliance as its simplicity and certainty must soon commend itself to the public. — *Engineering News.*

The Washington Aqueduct. — The project of supplying the capital with water by forming a tunnel through several miles of rock from the distributing reservoir above Georgetown to a much larger one in the vicinity of Howard University, is now rapidly advancing at all points. The great subterranean cylinder, when finished, will be eleven feet wide, seven-and-a-half feet high, and nearly 22,000 feet long, and will be able to furnish a liberal supply for many years in the future. Along the course of the new aqueduct, at convenient distances, five large shafts have been sunk to the average depth of nearly one hundred feet. The shafts are sunk about ten feet deeper than the floor of the tunnel, forming wells to receive the springs that flow through the interstices of the rock. Compressed air is the motive power employed for all the pumping, drilling, hoisting, and ventilating. A substantial edifice has been built at a central point upon the Chesapeake & Ohio Canal, where fuel is delivered at least cost. This building contains six 100 horse-power boilers, arranged in one battery, and these are worked incessantly, night and day, except Sundays, for the compression of air. Four 150 horse-power compressors receive the air, which, during the process of compression, is cooled by a spray of water injected into the air-cylinder, and in this condition passes into the air-receiver. A complicated and singular process then forces the compressed air through a 12-inch pipe, into a body of water, which experience has shown to be the easiest way of extracting the moisture that would cause it to freeze in the machine using it. The concentration of the power at one point necessitates the use of five miles of 12 and 6-inch pipes to convey and distribute the compressed air. There are in operation in the several shafts twenty-eight rock drills, which work under a pressure of sixty pounds to the square inch, and enable the contractors to proceed with the tunnel about fifty feet per day. Twice in twenty-four hours there is a temporary cessation of the boring apparatus. After detaching and protecting the machinery, the blasts are set, and all the workmen ascend the shaft. The blasts are discharged simultaneously by a battery, the foul air and smoke are driven out by turning on the air, another gang of workmen descends, and boring again begins. Nearly 300 men are employed at the different shafts, in addition to a Ledgerwood hoisting-engine, and a Knowles pump stationed at each shaft. Appliances are at hand for graduating the pressure, and a stop-valve can instantly separate any one shaft from the rest of the works. The débris produced by blasting is removed on cars, propelled on rails to the shaft, where it is hoisted, emptied, and the car returned, there being a double track of rails in the tunnel. The broken rock is conveyed to the site of the new reservoir, where it is utilized by more than 350 men, who are at work on the construction of that immense tank. The whole enterprise was to be finished before the middle of next year; but it is now conceded that at least another year must be added to the time. — *New York Tribune.*

GELATINE EDITION.

During the year 1885 a series of Gelatine Prints, (Heliotypes) photographed from the natural object, will be published in the AMERICAN ARCHITECT AND BUILDING NEWS.

These gelatine prints will be issued once a month to those subscribers only who will pay a dollar extra for the twelve prints.

SUBSCRIPTION PRICES.

[IN ADVANCE.]

REGULAR EDITION: — *$6.00 per year; $3.50 per half year.*

GELATINE EDITION (the same as the regular edition, but including 12 Gelatine Prints): — *$7.00 per year; $4.00 per half year.*

MONTHLY EDITION (identical with the first weekly issue for each month, contains no Gelatine Prints,): — *$1.75 per year; $1.00 per half year.*

IMPORTANT NOTICE.

IT will greatly simplify our book-keeping and prevent future complaint, if those of our present subscribers who wish to receive the gelatine plates will make their remittances cover the *entire* year to January 1, 1886, by remitting at the rate of fifty cents for each month, in addition to the dollar for the gelatine prints.

Example: X. whose subscription naturally would end October 1, 1885, should, if he desires the gelatine edition, remit $2.50 additional — that is, $1.00 for the gelatine prints and fifty cents for each of the remaining months of the year.

BUILDING INTELLIGENCE.

(Reported for The American Architect and Building News.)

[*Although a large portion of the building intelligence is provided by their regular correspondents, the editors greatly desire to receive voluntary information, especially from the smaller and outlying towns.*]

BUILDING PATENTS.

[*Printed specifications of any patents here mentioned, together with full detail illustrations, may be obtained of the Commissioner of Patents, at Washington, for twenty-five cents.*]

308,614. Hot-Air Furnace.—George Kamp, Utica, N. Y.

308,648. Bridle for Paint-Brushes. — William L. Barnes and G. Byron Sibley, Bennington, Vt.

308,656. Opera-Chair.—John Du Bois, Dubois, Pa.

308,678. Alarm-Lock. —Jacob W. Kolsa, Newark, N. J.

308,698. Shutter-Worker. — Edwin Prescott, Arlington, Mass.

308,703. Fret-Saw Handle. — Christopher Richardson, New York, N. J.

308,707. Reamer. — Peter E. Shirk, Spring Grove, Pa.

308,709. Glass-Cutter Guide.—Philip Sinsz, Baltimore, Md.

308,710. Tile-Machine.— John S. Smith, Jackson, Mich.

308,717. Bidet for Commodes. — David Watson, New York, N. Y.

308,721. Fire-Escape. — Samuel Whitehouse and Scott R. Frye, Bath, Me.

308,728. Sash-Holder. — Sherman E. Anthony, Stillwater, N. Y.

308,735. Weather-Strip. — Geo. W. Bell, St. Joseph, Mo.

308,738. Pile-Driver.—Chas. Bliven, Norfolk, Va.

308,739. Hinge. — Bernard P. Bogy, St. Louis, Mo.

308,742. Coal-Chute and Vault-Cover.—Harold Borup, St. Paul, Minn.

308,746. Carpenter's Gauge. —Augustus J. Burger, New London, Wis.

308,749. Door-Spring. — Enoch H. Clark, Greenland, N. H.

308,768. Door-Stop. — Levi P. Hazen, Cincinnati, Ohio.

308,773. Sash-Balance.—W. Haskell King, Athol, Mass.

308,786. Pipe-Wrench.—William S. Morrison, Fort Worth, Tex.

308,812. Attachment for Knob-Roses. — Garret Van Winkle, North Plainfield, N. J.

308,820. Combined Anvil and Vise.—Joseph Austin, Rutland, Vt.

308,823. Door-Securer. — William J. Bitter, Toledo, O.

308,825-826. Structural Shape for Columns, Pilasters, etc.—Edward M. Butz, Allegheny, Pa.

308,827. Metal Column, Pilaster or Girder. —Edward M. Butz, Allegheny, Pa.

308,828. Structural Shape for Columns, Pilasters, and Girders. — Edward M. Butz, Allegheny, Pa.

308,829. Metal Column, Pilaster or Girder. —Edward M. Butz, Allegheny, Pa.

308,833. Portable Structure. — Johan G. C. Döcker Copenhagen, Denmark.

308,837. Spike.—Stiles Frost, Boston, Mass.

308,842. Cutter and Reamer. — Eldon B. Hunt, Delaware, O.

308,850. Lathing-Apparatus. — Jas. Oppenheimer, Shenandoah, Iowa.

308,861. Cut-off for Cisterns. — Daniel S. Troy, Montgomery, Ala.

SUMMARY OF THE WEEK.

Baltimore.

Dwellings.—Frank E. Davis, architect, has prepared drawings for James Thompson, Esq., for 2 three-st'y brick buildings, with Cheat River and marble trimmings, each 18′ x 50′, to be erected on Laurens St., near Park Ave., to cost $11,000; Jackson Holland, builder.

Building Permits.—Since our last report seventeen permits have been granted, the more important of which are the following:—

A. L. Gorter, 5 three-st'y brick buildings (square), n s Preston St., bet. Charles St. and Lovegrove Alley; and 5 three-st'y brick buildings, s s Hoffman St., bet. Charles St. and Lovegrove Alley.

Otto Goldbach, 5 three-st'y brick buildings, e s Wolfe St., s of McElderry St.

James J. Brown, three-st'y brick building, w s Greenmount Ave., bet. Preston and Biddle Sts.

Aug. Krebs, 2 three-st'y brick buildings, w s Hanover St., bet. Clement St. and Fort Ave.

Wm. J. Clendiven, 3 three-st'y brick buildings, n s Preston St., bet. Broadway and Bond St.; and 2 two-st'y brick buildings, s s St. Joseph St. in rear.

Alterations.—Geo. Archer, architect, has prepared plans for alterations to the Central Savings Bank, cor. Charles and Lexington Sts., to cost $2,000; John Haswell, builder.

Boston.

Building Permits.—*Marlborough St., No.* 188, Ward 11, for Jas. J. Minot, brick dwell., 24′ x 62′ 2″, mansard; B. D. Whitcomb, builder.

Brookline St., near Maple Ave., Ward 22, for City of Boston, brick gate-chamber, 24′ x 54′, pitch; Park Department, builder.

Huntington Ave., near Tremont St., Ward 22, for A. Geiger, 2 brick dwells. and stores, 37′ 6″ x 53′ 2″, flat.

East Fifth St., Nos. 708, 710 *and* 712, Ward 14, for H. B. Stratton, 3 brick dwells., 22′ x 50′, pitch; H. B. Stratton, builder.

East Eighth St., No. 579, Ward 14, for W. G. Fogg, wooden dwell., 28′ x 38′, flat; Clark & Lee, builders.

Huckin Ave., No. 17, Ward 20, for A. Hutchins, wooden dwell., 23′ x 26′, pitch; W. Ballantine, builder.

Draper St., cor. Holmes Ave., Ward 24, for A. Crawford, 2 wooden dwells., 15′ x 30′, pitch; A. Crawford, builder.

Carruth St., cor. Beal St., Ward 24, for Mrs. L. F. & R. W. Humphrey, wooden dwell., 13′ x 17′ and 20′ x 33′, pitch.

Leonard St., near Norfolk St., Ward 24, for Samuel Rockwell, wooden dwell., 14′ x 15′ and 29′ x 31′, pitch.

Butler St., near Vose St., Ward 24, for Jos. Pope, 2 wooden dwells., 15′ x 18′ and 22′ x 30′, pitch; Jos. Pope, builder.

Savin St., near Warren St., Ward 21, for R. M. Gooch, 2 wooden dwells., 20′ x 45′, mansard; Jno. Patton, builder.

Rogers St., No. 33, Ward 15, for W. L. Lewis, wooden dwell., 20′ x 40′, flat; W. L. Lewis, builder.

Fairfax St., near Carruth St., Ward 24, for H. S. Carruth, 2 wooden dwells., 31′ x 31′, pitch; F. M. Severance, builder.

Eliot St., near Hagar St., Ward 23, for F. C. Adams, wooden dwell., 25′ x 28′, pitch; A. A. Ayers, builder.

Lamartine St., near Wyman St., Ward 23, for J. A. Frampton, wooden dwell., 28′ x 36′, flat; J. Linphold, builder.

North Beacon St., cor. George St., Ward 25, for H. P. Goodnough, 4 wooden dwells., 19′ x 27′, pitch; H. M. Perry, builder.

Brooklyn.

Building Permits.—*Fifty-fifth St.*, s s, abt. 20′ e Second Ave., 4 two-st'y frame dwells., tin roofs; cost, each, $1,800; owner and builder, J. G. Carroll, 103 Thirty-ninth St.; architect, S. M. Bogert.

North Second St., No. 380, s s, abt. 175′ e Union Ave., rear, two-st'y frame bakery and wagon-house, tin roof; cost, $2,650; owner, John H. Albohn, 380 North Second St.; architect, Leonhard F. Graetter; builder, Jacob Schoch.

Cedar St., s s, 126′ 6″ w Myrtle Ave., 3 three-st'y frame tenements, tin roofs; cost, each, $3,500; owner and builder, Fr. Herr, 778 Broadway; architect, John Herr.

Bedford Ave., s e cor. Hancock St., 4 three-st'y brown stone stores and flats, tin roofs; cost, corner, $7,000; other 3 $5,000 each; owner and builder, R. O. Frost, No. 1 Hunterfly Road; architect, Amzi Hill.

High St., n s, 90′ w Adams St., two-st'y and basement brick dwell., tin roof, wooden cornice; cost, $3,500; owner, Mrs. E. O'Connor, cor. High and Adams Sts.; builders, John Guilfoyle and R. J. Brown.

Hull St., n s, 150′ e Rockaway Ave., 5 two-st'y brick dwells., gravel roofs; cost, each, $3,000; owner, W. H. H. Robins, 110 Patchen Ave; architect, B. T. Robbins; builders, E. K. Robbins and Jno. Remsen.

Manhattan Ave., No. 84, e s, 365′ 10″ n Van Cott Ave., four-st'y frame tenement, tin roof; cost, $5,690; owner, James MacFarlane, 117 Milton St.; architect, Fred'k Weber; mason, John Cashman.

Herkimer St., n s, 100′ e Hopkinson Ave., 5 two-st'y brick dwells., gravel roofs; cost, each, $4,000; owner, etc., Matthew Nolan, Pacific St.

Wyckoff St., s s, 75′ w Nevins St., four-st'y brick tenement, tin roof; cost, $9,000; owner and architect, Robert Dixon, 219 Montague St.; builder, Owen Nolan.

Jackson St., No. 98, s s, 100′ e Leonard St., two-st'y frame dwell., tin roof; cost, $2,250; owner, Henry Nitz, 98 Jackson St.; architect, Julius I. Smith; builder, A. Kunzweiler.

Carlton Ave., e s, 206′ 3″ n Myrtle Ave., two-st'y brick stable and dwell., gravel roof, brick cornice; cost, $7,500; owner, J. M. B. Caruthers, 180 Washington Park; architect, M. J. Morrill; mason, P. J. Carlin; carpenter, not selected.

Chicago.

Building Permits.—L. Weick, 2 two-st'y dwells., 337-337½ Mohawk St.; cost, $7,000; architect, A. M. F. Golden.

C. G. Bode, four-st'y store and dwell., 428 Twelfth St.; cost, $10,000; architect, C. G. Bode.

L. B. Otis, two-st'y rear addition, 2427 Michigan Ave.; cost, $3,000.

M. W. Ryan, 3 three-st'y stores and flats, 428-430 Van Buren St.; cost, $17,000; architect. G. Vigeant; builder, J. McGinnis.

E. S. Esty, 2 two-st'y stores and dwells., 615-617 Van Buren St.; cost, $8,000.

Wm. A. Hansberg, two-st'y flat, 94-96 Dayton St.; cost, $2,500.

J. Kubel, two-st'y dwell., 3120 Wentworth Ave.; cost, $2,500; architects, Gutrich Bros.

J. L. Campbell, 4 two-st'y dwells., Wilcox Ave.; cost, $12,000; builders, Campbell Bros. & Co.

Mrs. S. J. Steadman, two-st'y flats, 1272 Monroe St.; cost, $2,500.

F. C. Lang, 2 two-st'y dwells., 62 Pearson St.; cost, $6.000; architect, C. H. Gottig; builder, J. McCurty.

J. Hanziger, two-st'y flats, 598 South Western Ave.; cost, $3,000.

New York.

The armory competition having been settled, as reported in our last issue, little of general interest will be started until after January 1. Work is now being finished as rapidly as possible, and outside of ordinary speculative buildings nothing is reported.

The appointment of a new Commissioner of Public Works is waited for with interest, as important work will be under the control of the next incumbent.

Building Permits.—*Courtland Ave.*, e s, 50′ n One Hundred and Forty-ninth St., 2 four-st'y frame tenements, tin roofs; cost, each, $6,000; owner, Wm. Spieker, 183 Third Ave.; architect, John Rogers.

Ninth Ave., n w cor. Eighty-second St., four-st'y brick dwell. and store, tin roof; cost, $14,500; owners, E. A. Cruikshank & Co., 163 Broadway; architect, Ralph S. Townsend; builders, I. A. Hopper and R. Townsend.

One Hundred and Fiftieth St., n s, 325′ e Morris Ave., three-st'y frame dwell., tin roof; cost, $4,000; owner, Patrick Kelly, 505 West Fifty-sixth St.; architect, Geo. W. Hughes.

One Hundred and Seventh St., n s, from Fourth St. to Lexington Ave., one-st'y brick skating-rink, fire-proof roofing material; cost, $25,000; lessee, Jane B. Muxlow, 200 East Seventy-fourth St.; architects, J. B. McElfatrick, Sons & De Baud.

One Hundred and Forty-ninth St., n s, 125′ w of Courtland Ave., three-st'y frame tenement, tin roof; cost, $4,000; owner, Michael Vetter, One Hundred and Fiftieth St., near Courtland Ave.; architect, Adolph Pfeiffer.

West Fourteenth St., No. 542, three-st'y brick office, gravel roof; cost, $2,500; owner, H. K. Thurber, 146 West Twelfth St.; builder, J. G. McMurray.

Walker St., Nos. 88 *and* 90, seven-st'y brick store, metal roof; cost, $40,000; owner, John Bornhoeft, 30 St. Mark's Pl.; architect, John B. Snook; builder, C. Eberspacher.

One Hundred and Eighteenth St., n s, 87′ e Third Ave., 2 four-st'y brick flats and stores, tin roofs; cost, each, $20,000; owner and builder, James Wood, 341 East One Hundred and Sixteenth St.; architect, M. V. B. Ferdon.

Seventieth St., s s, 125′ e Madison Ave., 5 four-st'y brown-stone front dwells., tin roofs; cost, total, $90,000; owners, architects and builders, Chas. Graham & Sons, 305 and 307 East Forty-third St.

First Ave., n e cor. One Hundred and Twenty-first St., 7 five-st'y brick tenements and stores, and 2 one-st'y brick stores, tin roofs; cost, total, $100,000; owner and builder, Patrick Sheridan, 124 Race St., Elizabeth, N. J.; architects, Will. Alan O'Hea.

One Hundred and Twenty-third St., s s, Eighth St. to St. Nicholas Ave., 6 brick dwells. and 2 brick dwells. with stores, tin roofs; cost, dwells. each, $9,000; stores and dwells., each $14,000; owner, H. Josephine Wilson, 325 East Fourteenth St.; architect, D. T. Atwood; builders, Patrick Childs and J. G. Scheel.

Alterations.—*East Forty-second St., Nos.* 32 *to* 38, eight-st'y brick extension, fire-proof roof; cost, $9,000; owner, Lincoln Safe Deposit Co., Thomas L. James, President, on premises; architect, John B. Snook; builder, D. H. King; iron-work, A. J. Campbell.

Pine St., No. 73, repair damage by fire; cost, $5,000; owner, Amos R. Eno, 8 Pine St.; builders, A. G. Bogert & Bro.

Thirty-fifth St., n s, 35 West Broadway, two-st'y brick extension, tin roof; cost, $3,000; lessees, Hyde & Behman, 22 Eighth Ave., Brooklyn; architect, John Sexton.

COMPETITIONS.

ASSOCIATION HALL.

[**At Richmond, Va.**]

The Richmond Mozart Association advertises for plans to build a new Mozart Hall. A premium of one hundred dollars is offered for the plan adopted. Said plans are to be sent in **on or before the first Monday in January, 1885.**

The building to cost twenty-five thousand dollars, with a seating capacity of fourteen hundred. The building to front eighty feet, with a depth of one hundred and twenty feet.

For particulars apply to A. BARGAMIN, Chairman of the Building Committee, 907 East Main St., Richmond, Va. 468

AMERICAN ARCHITECT COMPETITIONS.—NEW SERIES.

As the busy season for this year has nearly passed, the younger men who have in past years evinced an active interest in the little competitions we have held from time to time, may be ready to test once more their skill in design in competition with their fellows. Therefore we take pleasure in inviting their attention to the following

PROGRAMME.

Most people who live in the country, or in the suburbs of a large town, and have sufficient means, usually feel obliged to "set up their carriage," and of course a carriage implies horses, and a building in which the entire establishment can be housed. Therefore we propose as the subject of the present competition a barn such as the dweller in a house that has cost $5,000 would consider an appropriate adjunct of his establishment; but as this may be somewhat ambiguous, seeing that some men think more of their horses than they do of their families, we will say that the proprieties would be best observed if the cost of the barn should range between $1,000 and $1,500.

The barn must furnish accommodation for two horses and a cow; the carriage-room must be large enough for two wheeled vehicles and a sleigh; and proper provision must be made for harness, feed and hay, and the stableman must not be overlooked. Water and ventilation must also be kept in mind.

Required:—A perspective drawing of the barn, elevations of the sides not shown in the perspective, a plan or plans, and a reasonable amount of detail; all to be included on a single sheet, 21″ x 33″ within the framing lines. A short description and the result of a *bona fide* estimate must also be furnished. For the best three designs we will pay equal prizes of thirty dollars each.

Conditions:—Drawings must be received at the office of the *American Architect,* on or before Saturday, December 20, 1884.

The three prize drawings are to remain the property of the publishers.

All designs submitted are subject to publication in the *American Architect* at the pleasure of the editors.

All designs must be sent in signed only by a motto —*not a graphic symbol*—the name and address of the author being sent enclosed in a sealed envelope, endorsed with a duplicate motto.

The jury of award will be composed of three architects.

BOSTON TERRA-COTTA CO.

A CARD.

We desire to inform our friends and patrons that the fire of December 3d, which destroyed many of our drawings, models, etc., has not materially impaired our ability to meet the immediate wants of our customers.

We have still intact our original factory; all our five large kilns are in operation, and our machinery is safe. These, without the structure which was damaged, give us a much larger capacity than that of any other Terra-Cotta Works in New England. Moreover, owing to the fact that the roof of our new brick building was saved we have already two of the floors in that building in operation, and expect to keep faith with all our contracts.

We take this opportunity, also, to thank our many friends all over the country for their kindly expressions of sympathy.

BOSTON TERRA-COTTA CO.,
394 FEDERAL ST., BOSTON.

December 9, 1884.

Publishers' Department.

The American Architect and Building News.

PUBLISHED EVERY SATURDAY BY

JAMES R. OSGOOD & COMPANY,

211 TREMONT STREET, BOSTON, MASS.

BRANCH OFFICE, 658 BROADWAY, NEW YORK.

15 cents per copy; $6.00 per year; six months, $3.50
12 Monthly Numbers, $1.75.

☞ Payment should be made *directly* to the publishers, either by draft or post-office order.

New Advertisements.

WILLIAM WRIGHT (New York), Decorator. Page iii.
DETROIT ELECTRICAL WORKS (Detroit, Mich.), Electrical Work. Page ix.
N. & G. TAYLOR CO. (Philadelphia, Pa.), Roofing Materials. Page xiv.
HARPER & BROS. (New York), Books. Page xii.
JOHN H. HILLER (New York), Snow Guards. Page x.
W. T. COMSTOCK (New York), Books. Page xii.
MONSON SLATE SELLING AGENCY (Lowell, Mass.), Slate. Page xiv.

PROPOSALS.

BOILERS. [At Traverse City, Mich.]

TRAVERSE CITY, MICH. December 3, 1884.

Sealed proposals will be received by the Board of Commissioners **until 3 P. M., of Wednesday, January 21, 1885,** at which time said proposals will be opened at Detroit, Mich., for the boilers required for the State Northern Asylum for the Insane, viz.: two fire-box drop-return flue-boilers, for heating purposes, each 26 feet long and 8 feet diameter, and two smaller boilers for power purposes, all of steel.

A bond in the full amount of the contract, with two approved sureties, residents of the State of Michigan, will be required from the successful bidder.

For information, plans, specifications, etc., address, C. M. WELLS, Superintendent.

By order of the Board of Commissioners. 473

FOR SALE.

PARTNERSHIP. — Architectural partnership for sale in south-west Texas, Half interest in good growing practice in a city of 35,000 inhabitants, beautiful climate, no cold winter, a splendid chance for a good man of small means. Address X., J. C. Whitlow, Thirteenth St., cor. M½ St., Galveston, Tex. 467

WANTED.

BACK ISSUES. — Wanted *American Architect and Building News*, for January 15, February 12, March 5, May 7, June 4, 1881. Address Isaac Hammond, Charleston, S. C. 468

WANTED.

DECORATIVE DESIGNER. — Wanted an experienced and thoroughly competent designer and decorator, who is familiar with values in interior woodwork, frescoing, stained-glass, etc. Address, stating age, experience and references, the Robert Mitchell Furniture Co., Cincinnati, O. 470

PROPOSALS.

POST-OFFICE LETTER BOXES. [At Ottawa, Canada.]

DEPARTMENT OF PUBLIC WORKS,
OTTAWA, November 17, 1884.

Sealed tenders addressed to the undersigned, and endorsed "Tender for Post-Office Letter Box Fronts," will be received **until Monday, 15th,** proximo, inclusive for the supply of about 10,000 post-office letter box fronts.

Parties disposed to submit tenders may obtain forms of tender, specification, and any further particulars at this department.

Parties tendering will be required to submit with their tenders a sample of the box they are prepared to provide.

Tenders will not be considered unless made on the printed form supplied, and signed with the actual signatures of the parties tendering.

The department will not be bound to accept the lowest or any tender.

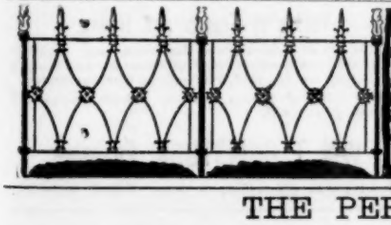
By order, F. H. ENNIS, Secretary.

STONE AND IRON WORK OF APPROACHES. [At Kansas City, Mo.]

OFFICE OF SUPERVISING ARCHITECT,
TREASURY DEPARTMENT,
WASHINGTON, D. C., December 4, 1884.

Sealed proposals will be received at this office **until 2 P. M., on the 28th day of December, 1884,** for furnishing and laying all the stone flagging for sidewalks, etc., and all the stone block paving; also for furnishing and fixing in place the iron railings, grilles, doors, and gratings required for the approaches to the custom-house, etc., building at Kansas City, Mo., in accordance with drawings and specification, copies of which and any additional information may be had on application at this office, or the office of the superintendent.

Bids must be accompanied by a certified check, and those received after the time of opening will not be considered. M. E. BELL,
469 Supervising architect.



WE NOW OFFER this pattern of our first class **Composite Wrought Iron Railing,** at the rate of $1.50 per lineal ft. 3 ft. high. The Chilled Iron Ornaments are poured on to the Wrought Iron Rods, welding the panel into one piece without joints or crevices for rust to enter. It is made to set on stone or to go into ground. Our Railings are everlasting and one of them is worth two of any other kind. Composite Iron Works Co. 83 Reade St., N. Y.

THE PERMANENT
EXHIBIT & EXCHANGE
Of Building Materials and Improvements.

Open free to the Public every business day of the year.

N. E. cor. Wabash Av. and Washington St., CHICAGO.

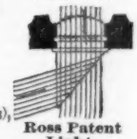
Architects and visitors interested in building, from all parts of the country, are particularly invited to make this establishment their headquarters. Information and assistance will be extended to them, and use of writing and reading rooms gratis.

Visitors' Correspondence may be addressed in care of this establishment.

HENRY LORD GAY, Proprietor. T. S. HOTCHKISS, Manager.

Sidewalk
— AND —
VAULT
LIGHTS.

Sole Manufacturers of the



Ross Patent Light.

FLOOR and ROOF LIGHTS.

DAUCHY & CO.,
125 & 127 Indiana St., (near Wells),
CHICAGO, ILL.

H.W.JOHNS'
ASBESTOS
LIQUID PAINTS

Are the purest, finest, richest, most durable and economical paints ever made for structural purposes. Samples of colors and Descriptive Price List free by mail.

From American Agriculturist, November 1880.

"We can gladly refer the reader to our recommendations of this firm and its paints in the past."

Send for Copy of our Pamphlet,

"STRUCTURAL DECORATION,"

with illustrations of prominent buildings and other structures painted with our paints.

Roof, Car, and Bridge Paints.

In seven colors. Are especially adapted for out-buildings, barns, fences, and for iron and rough woodwork.

STRICTLY PURE COLORS

For the use of Artists, Decorators, and Painters. Are ground in refined Calcutta Linseed Oil, to a fineness not excelled by the best imported artist or "tube" colors to which they are fully equal in depth and brilliancy of color.

ASBESTOS ROOFING.

The best in the market. Suitable for steep or flat roofs in all climates. Easily applied by any one.

ASBESTOS BUILDING FELT.

For interlining frame buildings, floors, etc. It is wind, dust, and strictly fire-proof.

Send for Full Descriptive Catalogue, Samples, etc.

H. W. JOHNS' Manufacturing Company,

No. 87 MAIDEN LANE, NEW YORK.

SOLE MANUFACTURERS of Genuine Asbestos Liquid Paints, Roofing, Steam-Pipe and Boiler Coverings Piston and Packing, Millboard, Fire-Proof Paints, Cements, Coatings, etc.

PROPOSALS.

HARDWARE. [At Memphis, Tenn.]

OFFICE OF SUPERVISING ARCHITECT,
TREASURY DEPARTMENT,
WASHINGTON, D. C., November 28, 1884.

Sealed proposals will be received at this office **until 2 o'clock, P. M., on the 12d of December, 1884,** for supplying and delivering at the United States Treasury Building at Washington, D. C., all the hardware required for the custom-house and post-office building at Memphis, Tenn., in accordance with specification and schedule, copies of which and any additional information may be had on application at this office, or the office of the superintendent.

Bids must be accompanied by a certified check, and those received after the time of opening will not be considered. M. E. BELL,
468 Supervising Architect.

THE SIEMENS

Regenerative Gas-Lamp,

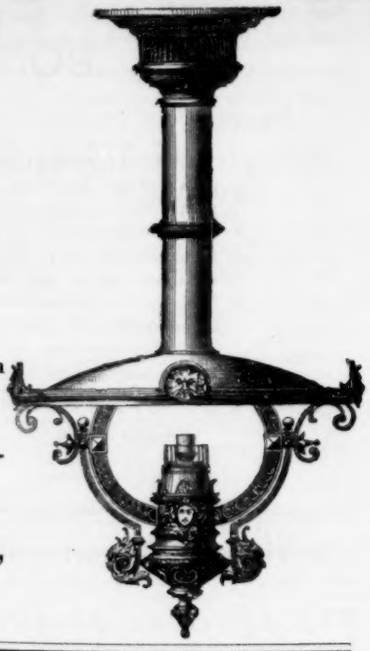
FOR LIGHTING AND VENTILATING.

The Cheapest, Best and Most Brilliant of all Gas-Lights.

Superior to the Electric Light in

ECONOMY, BEAUTY AND STEADINESS.

Particular attention is called to the *Excellent Ventilation* afforded by our system of Illuminating.



The Siemens Regenerative Gas-Lamp Co.,

Sole Makers for the UNITED STATES,

819 and 821 Filbert Street, Philadelphia.

PROPOSALS.

CATHEDRAL.

[At Kingston, Ont.]

Sealed tenders will be received **up to noon on Saturday, the 20th December,** for the completion of St. Mary's Cathedral, Kingston, Ont., which comprises principally the building of the main tower and spire in stone from the ground line to the height of 292 feet. Also the completion of four stone turrets to the height of 112 feet, and two turrets to the height of 160 feet. Plans and specifications to be seen at the Bishop's Palace, Kingston, Ont., and at the office of the undersigned, 235 Wilbrod St., Ottawa, after the 25th inst., where printed forms of tender and all necessary information can be obtained.

Tenders to be addressed to the Chairman of Improvement Committee Kingston Cathedral.

The lowest or any tender not necessarily accepted.

468 JAMES R. BOWES, Architect.

LABOR AND MATERIALS, FOR MARINE HOSPITAL BUILDINGS.

[At Baltimore, Md.]

OFFICE OF SUPERVISING ARCHITECT,
TREASURY DEPARTMENT,
WASHINGTON, D. C., November 29, 1884.

Sealed proposals will be received at this office, **until 2 P. M., on the 20th day of December, 1884,** for all the labor and materials required in the erection of the marine hospital buildings at Baltimore, Md., in accordance with drawings and specification, copies of which and any additional information may be obtained on application at this office, or the office of the Superintendent.

Bids must be accompanied by a certified check, and those received after the time of opening will not be considered. M. E. BELL,

468 Supervising Architect.

ARTESIAN WELL.

[At Fort Keogh, M. T.]

HEADQUARTERS DEPARTMENT OF DAKOTA,
OFFICE CHIEF QUARTERMASTER,
FORT SNELLING, MINN., December 1, 1884.

Sealed proposals, in triplicate, subject to the usual conditions, will be received at this office **until 12 o'clock, noon, on December 31, 1884,** at which time and place they will be opened in the presence of bidders, for sinking an artesian well at Fort Keogh, M. T. The Government reserves the right to reject any or all proposals.

Blanks, instructions to bidders and information furnished on application to this office or the office of the Post Quartermaster, at Fort Keogh, M. T.

JAMES M. MOORE,
Deputy Quartermaster-General, U. S. A.

469 Chief Quartermaster.

CAST-IRON WATER PIPE.

[At Minneapolis, Minn.]

OFFICE OF BOARD WATER COMMISSIONERS,
MINNEAPOLIS, MINN., November 29, 1884.

Sealed proposals will be received at the office of the Superintendent of Water Works **until 6 o'clock P. M., December 18, 1884,** for furnishing the following cast-iron water pipe free on board cars at Minneapolis.

Sealed bids will also be received for supplying specials for the following specified pipe separately: —

Twenty-nine thousand (29,000) feet of six (6) inch water pipe weighing thirty-five (35) pounds per foot.

Twenty-one thousand (21,000) feet of eight (8) inch water pipe weighing fifty (50) pounds per foot.

Twelve hundred (1,200) feet of ten (10) inch water pipe weighing seventy (70) pounds per foot.

Sixty-two (6,200) feet of twelve (12) inch water pipe weighing ninety (90) pounds per foot.

Thirteen hundred and fifty (1,350) feet of sixteen (16) inch water pipe weighing one hundred and fifty (150) pound per foot.

Thirty-six hundred and fifty (3,650) feet of twenty-four (24) inch water pipe weighing two hundred and fifty (250) pounds per foot.

Said pipe to lay twelve (12) feet to the length to be coated and tested before leaving the works by hydrostatic pressure, and under the hammer 300 pounds to the square inch, weights to be distinctly marked on pipes.

Twenty-five (25) per cent of the water pipe to be delivered on board the cars in Minneapolis, Minn., March 1, 1885. Twenty-five (25) per cent April 1, 1885, and the balance to be delivered by June 1, 1885.

Payments for the above-mentioned pipe to be made July 1, 1885.

Proposals will state the price per ton of 2,000 pounds, and must be indorsed "Proposals for cast-iron water pipe," and addressed to the undersigned.

The Board of Water Commissioners reserve the right to reject any or all bids, and to increase the above amount twenty (20) per cent. J. W. HENION,

468 Secretary Board of Water Commissioners.

PROPOSALS.

SEA-WALL.

[At Boston, Mass.]

OFFICE OF PARK COMMISSIONERS,
87 MILK STREET,
BOSTON, December 1, 1884.

Sealed proposals, addressed to the Park Commissioners, and indorsed "Proposal for Sea-Wall, etc., at Charles River Embankment," will be received at the office of the Park Commissioners, No. 87 Milk Street, **until 12 o'clock, M., of Tuesday, the 16th day of December, 1884,** and at that time they will be publicly opened and read.

Bids must be signed by the bidders and accompanied by a properly certified check or a bond for $2,000, with satisfactory sureties (conditioned for the execution of the contract (with a bond for $20,000 with satisfactory sureties for its performance) within ten days, in case the bid be accepted.

Bids will be compared on the basis of the engineer's approximate estimate of quantities of work, which is as follows: —

(*a*) 5,100 spruce piles, driven and prepared.
(*b*) 160 M. ft. B. M. of spruce lumber in place.
(*c*) 5,000 cubic yards of ballast.
(*d*) 1,500 cubic yards of split-stone masonry in foundations.
(*e*) 6,150 cubic yards of wall masonry.
(*f*) 560 " " coping-stone masonry.
(*g*) 60,000 " " dredged earth used for filling.
(*h*) Removal and disposal of projecting sea-wall, filling, etc.
(*i*) Removing a portion of Canal Bridge and the adjoining pile structure, and rebuilding the portion of the bridge removed.
(*j*) Removing a portion of West Boston Bridge and the adjoining pile structure, and rebuilding the portion of the bridge removed.

For further particulars see the advertisement accompanying form of contract.

Specifications may be obtained and plans may be seen at the office of the City Engineer, City-Hall, Boston.

The Park Commissioners reserve the right to reject any or all bids. CHAS. H. DALTON,
HENRY LEE,

468 Commissioners of the Dept. of Parks.

BRIDGES.

[In Nebraska.]

DEPARTMENT OF THE INTERIOR,
OFFICE OF INDIAN AFFAIRS, Nov. 17, 1884.

Sealed proposals, endorsed "Proposals for Building Bridges," will be received at this office **until 1 o'clock, Tuesday, the 16th day of December, 1884,** for the construction of three bridges on the Santee Sioux Reservation in Nebraska and Ponca Reservation in Dakota, at the following locations: on the Santee Reservation over the Bazile Creek, a bridge of three spans of sixty feet each, with fifteen feet approaches; on the Ponca Reservation, over the Niobrara River, a bridge nine hundred and sixty feet from end to end, and over the west fork of said river a span of sixty feet.

The bridges in question are to be of combination of wood and iron, with cast-iron shoes, resting on pile foundations, which over the Niobrara River are to be driven fifteen feet, over Bazile Creek thirteen feet, and over west fork of Niobrara River, fifteen feet, below water-level, and are to be built in accordance with plans and specifications to be seen at the offices of the Depot Quartermaster, at Omaha, Neb., the *Times*, of Denver, Col., and of the *Inter-Ocean*, of Chicago, Ill.

The construction of the bridges to be under the immediate supervision of a person to be designated by this department.

All bids must be accompanied by a certified check on some United States Depository, for at least five per centum of the amount of the proposal, which check will be forfeited to the United States in case any bidder or bidders fail to execute a contract with good and sufficient sureties; otherwise to be returned to the bidder.

In submitting bids, bidders should state the time required by them for the construction of the bridges, as this matter will be considered in making the awards, and made a part of the contract.

The right is reserved to reject any or all bids, or any part of any bid, if deemed for the best interest of the service. H. PRICE, Commissioner.

468

HASWELL'S

Engineers' Pocket-Book.

New Edition, Entirely Rewritten, From New Electrotype Plates.

Mechanics' and Engineers' Pocket-Book of Tables, Rules, and Formulas pertaining to Mechanics, Mathematics, and Physics, including Areas, Squares, Cubes, and Roots, etc.; Logarithms, Steam and the Steam-Engine, Naval Architecture, Masonry, Steam Vessels, Mills, etc.; Limes, Mortars, Cements, etc.; Orthography of Technical Words and Terms, etc., etc. Forty-fifth Edition, Revised and Enlarged. By CHARLES H. HASWELL, Civil, Marine, and Mechanical Engineer, Member of Am. Soc. of Civil Engineers, Engineers' Club of Philadelphia, N. Y. Academy of Sciences, Institution of Naval Architects, England, etc. 12mo, Leather, Pocket-Book Form, $4.00.

The above work sent by mail, postage prepaid, to any part of the United States or Canada, on receipt of the price.

Harper's Catalogue mailed, postage prepaid, on receipt of Ten Cents.

HARPER & BROTHERS,
Franklin Square, New York.

December Books.

Architectural Perspective for Beginners.

Containing Eleven Plates of Practical Examples, with full descriptive letter-press, designed to meet the wants of the large class of Students who take up the study without a teacher, as well as those in Architectural Offices.

Many will remember this as the title of a series of articles published in *Building* about a year ago. These have been re-written, new plates and much other new matter added, and the book will be found a plain, practical guide to the study of Perspective.

One large 4to volume, handsomely bound in cloth, price $3, post-paid.

Tables of Treads and Risers.

This set of Tables gives the Head-room, Number of Treads and Risers, Length of Room for any Height of Ceiling, for Straight, Platform or Circular Stairs.

One oblong 16mo volume, cloth, price 50 Cents, post-paid.

WM. T. COMSTOCK, Publisher,

6 ASTOR PLACE, - - - NEW YORK.

Two Months Free.

New Subscribers who pay their Subscription ($6.00 for the regular or $7.00 for the gelatine edition) for 1885, in full, before December 25, 1884, will receive, gratis, the nine issues for Nov. and Dec. 1884.

Boynton Furnace Co. 94 Beekman St., N. Y.

MANUFACTURERS OF
BOYNTON'S LATEST PATTERN FURNACES, RANGES, AND HEATERS. (40 YEARS EXPERIENCE.)

MASSACHUSETTS INSTITUTE OF TECHNOLOGY.

BOSTON, MASS.

This school offers a four year's scientific and professional training in Civil, Mechanical, Mining and Electrical Engineering, Chemistry, Natural History, etc.

THE COURSE IN ARCHITECTURE

embraces, besides the necessary scientific and mathematical subjects, the study of architectural history, and the constant practice of original design.

Students in Architecture are received into a two year's special course.

FRANCIS A. WALKER, Prest. J. P. MUNROE, Sec'y.

CORNELL UNIVERSITY

DEPARTMENT OF

Architecture,
Civil Engineering,
Mechanic Arts.

The course in Architecture embraces the necessary scientific and mathematical studies, the history of the art, and constant practice in drawing and designing.

Persons 21 years of age, properly qualified, are received as special students, without the usual entrance examinations. For copies of the Register, giving full information, address the

TREASURER OF CORNELL UNIVERSITY, ITHACA, N. Y.

SUPERIOR
COPPER WEATHER VANES.

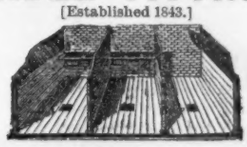
Gilded with Pure Gold.

THOS. W. JONES, 170-172 Front St., Near Maiden Lane, NEW YORK. Successor to Chas. C. Briggs. Successor to V. W. Baldwin.

Vanes made from any drawing or design on short notice. Illustrated Catalogue of over 200 designs mailed to any address. Mention this paper.

THE LARGEST MANUFACTURERS IN THE UNITED STATES
— OF —
STABLE FITTINGS.

[Established 1843.]



HAY RACKS, MANGERS, ETC., ETC.

☞ Send for Prices and Catalogues.

SAMUEL S. BENT & SON,
72 Beekman St., New York.

TWO MONTHS FREE.

New Subscribers who pay their Subscription ($6.00 for the regular or $7.00 for the gelatine edition) for 1885, in full, before December 25, 1884, will receive, gratis, the nine issues for November and December, 1884,

RICHARDSON & BOYNTON CO., 234 WATER STREET, N. Y. 84 LAKE ST., CHICAGO, ILL.

MANUFACTURERS OF FURNACES, HEATERS AND RANGES.

Fifty thousand of these popular furnaces in use. Etsablished, 1849. Same address as for twenty years past. Send for Circular.

Classified Advertisements.

[Advertisers can be indexed only under a single head free of charge.]

ARCHITECTS' MATERIALS. PAGE
Frost & Adams, Boston.....iii
Janetsky & Weber, Philadelphia, Pa.....iv
Wadsworth, Howland & Co., Boston.....ix

ANNUNCIATORS.
Edwards & Co., New York.....iv
W. R. Ostrander & Co., New York.....ix
Western Electric Co., New York&Chicago....ix

ASBESTOS COVERINGS.
H. W. Johns M'f'g Co., New York.....xi

ASPHALT. Henry R. Bradbury, New York.....x
New York Mastic Works.....i

BELL FOUNDERS.
H. McShane & Co., Baltimore.....xvi
Vanduzen & Tift, Cincinnati, O.....xvi

BOOKS AND JOURNALS.
Wm. T. Comstock, New York.....iv, xi
Harper Bros., New York.....xi
J. R. Osgood & Co. Boston.....x
Sanitary News.....xvii

BRICK (ORNAMENTAL).
Anderson Pressed Brick Co., Chicago.....xviii
Hydraulic Press Brick Co., St. Louis.....xviii
Peerless Brick Co., Philadelphia.....xviii
Waldo Bros., Boston.....xviii

BUILDING PAPER.
N. Y. Coal Tar Chemical Co., New York.....x

CARPETINGS.
W. & J. Sloane, New York.....i

CEMENT.
James Brand, New York.....xviii
Brooks, Shoobridge & Co., New York.....iv
Gabriel & Schall, New York.....xviii
Johnson & Wilson, New York.....xx
Sinclair & Balson, New York, N. Y.....xviii
Standard Cement Co., Hartford, Conn....xviii

CHAIR-SEATING.
Baker, Pratt & Co., New York and Phila.....ix
Harwood Chair Seat Co., Boston.....ix

CLOCKS FOR PUBLIC BUILDINGS.
E. Howard Watch & Clock Co., Boston.....xvi
Seth Thomas; Thomaston, Conn.....xvi

CONDUCTORS (WATER).
Austin, Obdyke & Co., Philadelphia.....ii
Boston Spiral Tube Works, Boston.....ii
Solderless Standing-Seam Conductor Co., Allegheny, Pa.....ii

CONTRACTING. Flynt Building & Construction Co., Palmer, Mass.....i

COPPERSMITHS AND METAL-WORKERS.
G. L. Swett & Co., Boston.....iv

COPYING-PRESS.
Geo. A. Ohl, Newark, N. J.....v

CORNICES (GALVANIZED IRON).
Mesker & Bro., St. Louis, Mo.....xv

COVERING (BOILER).
Shields & Brown, Chicago.....vi

CYPRESS-LUMBER.
A. T. Stearns Lumber Co., Boston.....xvi

DECORATIVE LEATHER.
Walker & Thompson, New York.....iii
C. H. Yandell & Co., New York.....i

DECORATORS.
Cox Sons, Buckley & Co., New York.....ii
Otto Gaertner, New York.....iii
Haskins, Chicago.....iii
L. Haberstroh & Son, Boston.....iii
J. Holmes, Boston.....iii
La Farge Decorative Art Co., New York.....iii
Donald McDonald, Boston.....ii
W. J. McPherson, Boston.....iii
Frank Hill Smith, Boston.....iii
William Wright, New York.....iii

ELECTRICAL-WORK.
Detroit Electrical Works, Detroit, Mich.....ix

ELEVATORS, ETC.
Clem & Morse, Philadelphia.....iv
Crane, New York & Chicago.....i
L. S. Graves & Son, Rochester, N. Y.....i
Geo. C. Howard, Phila.....v
E. E. McCalvey, Philadelphia.....v
Otis Brothers & Co., New York.....i
J. W. Reedy, Chicago.....v
Stokes & Parrish, Philadelphia.....i
Sulzer & Vogt, Louisville, Ky.....v
Whittier Machine Co., Boston.....i
Z. Wile, Boston.....v

ENGINES (CALORIC PUMPING).
Delamater Iron Works, New York.....x

ENGINES (GAS).
Schleicher, Schumm & Co., Philadelphia.....x

EXHIBITION (BUILDING).
H. L. Gay, Chicago.....xi

FENCING (IRON).
The Fred J. Myers M'f'g Co.....xv

FIRE-PROOF BUILDING.
Fire-Proof Building Co., New York.....xix
Frank Lyons, Jr., New York.....xix
Magneso Calcite Fire-Proof Co., Boston.....xix
Henry Maurer, New York.....xix
Ottawa Tile Co., Chicago.....xix
Raritan Hollow and Porous Brick Co.....xix
John J. Schillenger, New York.....xix
Wight Fire-Proofing Co., New York.....xix

FLOORS (INLAID).
J. W. Boughton, Phila.....ix
National Wood M'f'g. Co., New York.....x
Wm. Hannam & Co., New York.....xx
W. E. Wheeler, Toledo, O.....iv

FURNITURE.
Degraaf & Taylor, New York.....ix
Keeler & Co., Boston.....ix
Tomlinson & Carsley, Chicago.....ix

GAS-FIXTURES.
Archer & Pancoast M'f'g Co., New York.....x
Mitchell, Vance & Co., New York.....i
Oxley, Giddings & Enos, New York.....i
The Siemens Regenerative Gas-Lamp Co., Phila.....xii

GAS-MACHINES.
Denny Bros. & Co., New York.....viii
Pa. Globe Gas-Light Co., Phila.....ix
Tirrill Gas-Machine Co., New York.....viii

GAS-STOVES.
Goodwin Gas-Stove Co., Phila.....vii

GLASS ROOFING.
Arthur E. Rendle, New York.....i

GLASS (STAINED & ORNAMENTAL).
James Baker & Son, New York.....ii
Geo. R. Clarke & Co., Boston.....ii
Wm. Coulter & Son, Cincinnati.....ii
George Drake, Cleveland, O.....iii
Otto F. Falck & Co., New York.....ii
Friedericks & Staffin, Detroit, Mich.....iii
Alfred Godwin & Co., Phila.....iii
R. S. Groves & Steil, Philadelphia.....ii
H. Edgar Hartwell, New York.....iii
Kelley & Co., Boston.....iii
John Mathews, New York.....iv
McCully & Miles, Chicago.....ii
W. J. McPherson, Boston.....ii
Donald MacDonald, Boston.....iii
Redding, Baird & Co., Boston.....ii
Samuel West, Boston.....ii
W. C. Young, Phila., Pa.....ii

GRATES, ETC.
J. S. Conover & Co., New York.....xx
Henry Dibblee, Chicago.....iii
Thos. Dixon & Sons, Phila.....vii
Eureka Iron Works, Cincinnati, O.....iv
W. H. Harrison & Bro., Philadelphia.....vii
W. Jackson & Son, New York.....vi
Edwin A. Jackson & Bro., New York.....x
Wm. H. Jackson, New York.....xx
Murdock Parlor Grate Co., Boston.....viii
Open Stove Ventilating Co., New York.....vii

HARDWARE.
Burditt & Williams, Boston.....v

HEATING APPARATUS.
Bartlett, Hayward & Co., Baltimore.....i
Boynton Furnace Co., New York.....xiii
Richardson & Boynton Co., New York.....xiii

HEATING APPARATUS (STEAM).
Bates & Johnson, New York.....vii
John Davis & Co., Chicago, Ill.....vii
Detroit Steam Radiator Co., Detroit, Mich..vii
Holland & Thompson, Troy, N. Y.....vi
Newell Universal Mill Co., New York.....vii
Rutzler & Blake, New York City.....iii
H. B. Smith Co., New York.....vi
James P. Wood & Co., Philadelphia.....i

HELIOTYPE PROCESS.
Heliotype Printing Company, Boston.....x

HINGES.
M. W. Robinson, New York.....xv

HINGES (SPRING).
Van Wagoner & Williams Co., New York.....xx

INSURANCE.
American Fire Ins. Co.....x
Continental Insurance Co., New York.....xx
Hanover Fire Ins. Co.....v
Insurance Co. of North America, Phila.....x

IRON ROOFING.
Cincinnati Corrugating Co., Cincinnati....xiv

IRON-WORK (ARCHITECTURAL).
Bartlett, Hayward & Co., Baltimore.....i
J. E. Bolles & Co., Detroit, Mich.....xx
Boston Bridge Works.....iv
T. H. Brooks, Cleveland.....iv
Carnegie Bros. & Co., Pittsburgh, Pa.....xv
Cheney & Hewlett, New York.....xv
M. Clements, Cincinnati, O.....iv
Composite Iron-Works Co., New York.....xi
Cooper, Hewitt & Co., New York.....xx
Samuel J. Creswell, Philadelphia.....xv
J. B. & J. M. Cornell, New York.....xv
J. G. & T. Dimond, New York.....xv
Manly & Cooper M'f'g Co., Phila.....xv
McHose & Lyon, Dayton, O.....xv
Mesker & Bro., St. Louis, Mo.....xv
A. Northrop & Co., Pittsburgh, Pa.....xv
Passaic Rolling Mill Co., Paterson, N. J.....xv
Phœnix Iron Co., Philadelphia.....xv
Snead & Co., Louisville, Ky.....xv
Union Foundry and Pullman Car Wheel Works, Chicago, Ill.....xv
Wallis Iron Works, Jersey City, N. J.....xv

KILNS.
W. D. Thompson, New York.....ii

LOCKS.
Yale & Towne M'f'g Co., Stamford, Conn..xx

MACHINERY.
Goodell & Waters, Philadelphia.....xvi

MACHINERY (LAUNDRY).
Troy Laundry Machinery Co., Troy.....xx

MANTELS.
Henry Dibblee, Chicago.....iii
Joseph S. Miller & Bro., Philadelphia.....vii

MARBLE.
C. Carranza & Co., New York.....xviii

MARBLE MOSAICS.
J. Pasquali & C. Aeschlimann, New York...iii
Stillman & Nicoll, Boston, Mass.....ix

MARBLE-WORKERS.
A. L. Fauchere & Co., New York.....ii
Robert C. Fisher, New York.....i

METAL-WORK (ART).
Joseph Neumann, Philadelphia.....xvi
Tahatto M'f'g Co., Boston.....iv

METAL-WORKERS.
J. & R. Lamb, New York.....ii

MINERAL WOOL.
U. S. Mineral Wool Co., New York.....iv

MORTAR BLACK.
Henry D. Dupee, Boston.....xviii

MORTAR COLORS.
American Soapstone Finish Co., Providence, R. I.....iv
Samuel H. French & Co., Philadelphia.....iv

OILS.
Robert Colgate & Co., New York.....v

PAINT.
Howard Fleming, New York.....x

PHOTOGRAPHS.
J. W. Taylor, Chicago, Ill.....i

PIPE-COVERING.
The Chalmers-Spence Co., New York.....vi

PUMPS (STEAM).
Knowles Steam-Pump Works, New York & Boston.....v
H. R. Worthington, New York and Boston..v

RADIATOR (STEAM).
Detroit Steam-Radiator Co., Detroit, Mich....vii

REFLECTORS.
I. P. Frink, New York.....viii

REGISTERS.
Tuttle & Bailey Man'f'g Co., New York and Boston.....vii

ROOFING MATERIALS.
Anglo-American Roofing Co., New York.....x
W. Ehret Roofing Co., New York.....x
Eureka Slate Co., Poultney, Vt.....xiv
Granite Roofing Co., Phila.....xiv
N. E. Felt Roofing Co., Boston.....xiv
N. & G. Taylor, Phila.....xiv

ROOFERS.
John Farquhar's Sons.....x
Knisely & Miller, Chicago, Ill.....xiv

RUGS.
H. A. Hartley & Co., Boston.....vi

SANITARY SUPPLIES.
Myers Sanitary Depot, New York.....xx
Wm. Powell, Cincinnati.....xvii
Joseph Zane & Co., Boston, Mass.....xvi

SASH-CHAINS.
Thomas Morton, New York.....vi
Smith & Egge M'f'g Co., Bridgeport, Conn....x

SASH-WEIGHTS.
J. N. Raymond, Chicago, Ill.....vi

SCENERY (THEATRICAL).
Lafayette W. Seavey, New York.....xx

SCHOOLS (ARCHITECTURAL).
Cornell University, Ithaca, N. Y.....xiii
Institute of Technology, Boston.....xiii

SCREENS.
American Screen Co., Brookline, Mass.....ix

SEWER-GAS TRAP.
B. P. Bower & Co., Cleveland.....xviii

SEWER PIPE.
Akron Sewer Pipe Co. Akron, O.....xviii

SHINGLE STAINS.
S. Cabot, Jr., Boston.....v

SHUTTERS.
Clark, Bunnett & Co., New York.....xx

SHUTTER-WORKER.
C. S. Kempton, New York.....ix

SKYLIGHTS, ETC.
Bickelhoupt Bros., New York.....viii
G. Hayes, New York.....viii
John Seton, Brooklyn.....viii
G. L. Swett & Co., Boston.....iv
E. Van Noorden, Boston.....viii

SLATE.
T. F. & J. A. Hayden, St. Louis, Mo.....xviii
Story & Wilbur, Boston.....xiv
Monson Slate-Selling Agency, Lowell, Mass.....xiv

SNOW-GUARDS. John H. Hiller, Boston.....x

SOAPSTONE FINISH.
American Soapstone Finish Co., Providence, R. I.....xiv

STABLE FITTINGS.
Samuel S. Bent & Son, New York.....xiii

STATUARY (BRONZE).
National Fine Art Foundry, New York.....xvi

STONE (BUILDING).
Hallowell Granite Co., Bedford, Ind.....xviii
M. H. St. John, New York.....xviii
Malone & Co., Cleveland, O.....xviii
Ohio Building Stone Co., Cleveland.....i
G. P. Sherwood, New York.....xviii
Thomlinson & Reed, Chicago.....xviii

STOP-COCK.
Thos. Kelly & Bros., Chicago, Ill.....xvii

STREET-LIGHTING.
Globe Gas-Light Co., Boston.....viii

TERRA-COTTA.
Baltimore Terra-Cotta Co., Baltimore, Md...xix
Boston Terra-Cotta Co.....xi, xix
A. T. Chur, New York.....xix
A. Hall Terra-Cotta Co., Perth Amboy.....xix
Northwestern Terra-Cotta Wks., Chicago...xix
Indianapolis Terra-Cotta Co., Ind'polis.....xix
H. A. Lewis, Boston.....xix
Perth Amboy Terra-Cotta Co.....xix
Young O. Wilson & Son, Baltimore, Md.....xix

TILES.
American Encaustic Tiling Co., New York...i
T. Aspinwall & Son, New York.....i
Alfred Boote, New York.....iii
Henry Dibblee, Chicago.....iii
International Tile Co., New York.....iii
J. G. & J. F. Low, Chelsea, Mass.....iii
Miller & Coates, New York.....i
Fernando Miranda, New York.....i
Sharpless & Watts, Philadelphia.....ii
U. S. Encaustic Tile Co., Indianapolis.....i

TRANSOM LIFTER.
F. A. Reiher & Co., Chicago.....ix
J. F. Wollensak, Chicago.....ix

TRAPS.
Cooper, Jones & Cadbury, Phila.....xvii

VALVES AND PACKING.
Jenkins Brothers, New York.....x

VANES. T. W. Jones, New York.....xiii

VAULT LIGHTS.
Dauchy & Co., Chicago.....xi

VENEER CEILINGS.
Gardner & Co., New York.....ix

VENTILATION.
Globe Ventilator Co., Troy, N. Y.....viii
E. Van Noorden & Co., Boston, Mass.....viii

WALL PAPER.
C. H. George, New York.....iii

WASH-TUBS (PORCELAIN).
J. L. Mott Iron Works, New York.....xvii

WATER COLORS.
J. Marsching & Co., New York.....v

WATER-PROOFING.
Theodore Hunt, St. Louis, Mo.....xix

WIRE LATHING, ETC.
Clinton Wire Cloth Co., Clinton, Mass.....v

WOOD TURNING.
N. Y. Wood Turning Co., New York.....ix

SOAPSTONE FINISH.

Superior to Plaster or Sand Finish, for Walls and Ceilings. Send for Circular.

AMERICAN SOAPSTONE FINISH COMPANY,

P. O. BOX 35, PROVIDENCE, R. I.

Roofing Materials.

EUREKA SLATE CO.,

Quarriers and Dealers in

THE ONLY PURE UNFADING GREEN ROOFING SLATE.

PURPLE, SEA GREEN, RED, and BLACK SLATES.
Also Billiards, Paving Slabs, Mantels, Urinals and all Kinds of Slate Works.
Eureka Slate Quarries, Poultney, Vt.
Outer Temple Building,
Strand, London, England.
Send for Price List.

GRANITE ROOFING.
(PATENTED.)

For steep or flat roofs, Felt and Burlap combined and granitized; a finished roofing, easy to lay; Strong, elastic, durable and cheap. Best roof for Iron-works. Acids and sulphur have no effect on it. Send for circular and sample.

THE GRANITE ROOFING CO.,
15th and Washington Ave., PHILADELPHIA.

Unfading Black Roofing-Slates.

From the Monson (Maine) Slate Quarries.
These Slates are uniform in thickness, very strong, smooth surfaces and unfading in color.
For sale by
Monson Slate Selling Agency,
P. O. BOX 337, LOWELL, MASS.

T. F. & J. A. HAYDEN,
WHOLESALE DEALERS IN
ROOFING SLATE
Cor. Twelfth and Locust Sts. St. Louis, Mo.

ESTABLISHED 1852. Incorporated 1865. Capital $60,000.
LEVI L. WILLCUTT, Pres't. J. L. Ross, Treas'r.

NEW ENGLAND
Felt Roofing Co.
22 Milk St., Boston.
Originators of Felt Roofing in New England.
Inventors and only Manufacturers of the Celebrated
"BEEHIVE BRAND."

THE CINCINNATI
CORRUGATING COMPANY,
CINCINNATI, OHIO.
Superior Iron Roofing, Siding, Ceiling, Arches. Most Economical, Durable and Effective.
Send for our Illustrated Catalogue.

A TIN ROOF that will last for CENTURIES.

We have just

ESTABLISHED 1810.
N. & G. TAYLOR CO.,
Philadelphia.

What is wanted.

The Name is the "TAYLOR GENUINE" Double Coated Roofing.
"OLD STYLE."
Registered Trade-Mark.

It is Double Coated, is Hand Dipped, is Guaranteed, is the Finest Roofing Tin made.

Write for Samples, Prices, and Circulars.

Genuine "OLD STYLE" Roofing.

STORY & WILBUR,
Formerly A. Wilbur & Co. (Established 1821.
EMPORIUM FOR
ROOFING SLATES
We have the entire production of
MERRILL'S
BROWNVILLE (MAINE) SLATE
ALSO THE
MONSON (MAINE) SLATE,
Both of which are Black and Unfading and the standard Slate of the market. Used by all Boston architects for first-class buildings, and the cheapest slate in the market for the quality. Also,
WELSH, BANGOR PENNSYLVANIA, STAR PENNSYLVANIA, BLACK DIAMOND PURPLE and GREEN SLATES
Roofing-Tin, Zinc, Solder, Nails, Elastic Cement, Rosin-Sized, Tarred and Dry Felts.
RED SLATES.
Our stock of Slates embraces over 20,000 squares, of all grades and prices. Particular attention to shipments by vessel or rail, for export or home trade.
Special rates by car-loads from quarries.
Inquiries promptly answered.
Slate Wharves, 529 Commercial St.,
Joseph Story. BOSTON. S. A. Wilbur.

KNISELY & MILLER
129 and 131 South Clinton St., Chicago,
(Send for Illustrated Catalogue.)
Slate, Tin & Iron Roofers.

MANUFACTURERS OF
GALVANIZED IRON CORNICES.
THE HAYES PATENT SKYLIGHTS.
(Under License.)

CORRUGATED IRON FOR ROOFING, &c.
Austin's Corrugated Expanding Conductor Pipe.

Nantucket Scraps;
or, The Experiences of an Off-Islander, in Season and out of Season, among a Passing People. By Mrs. Jane G. Austin. 1. vol. 16mo, $1.50.
J. R. Osgood & Co., 211 Tremont St., Boston.

TWO MONTHS FREE.

New Subscribers who pay their Subscription ($6.00 for the regular or $7.00 for the "gelatine" edition), for 1885, in full, before December 25, 1884, will receive, gratis, the nine issues for Nov. and Dec. 1884.

Iron-Work.

J.B.&J.M.CORNELL,

MANUFACTURERS OF

IRON

COLUMNS, LINTELS,

AND

GIRDERS,

DEALERS IN

BEAMS AND CHANNELS.

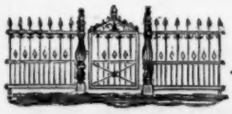
141 CENTRE ST., NEW YORK.

McHOSE & LYON, Dayton, Ohio,

ARCHITECTURAL IRON WORKS.

IRON FRONTS FOR BUILDINGS,

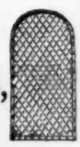
Columns, Girders, Wrought-Iron Fencing, Prismatic Sidewalk-Lights, Iron Stairs. All kinds of Iron-Work used in Buildings, Grey Iron Steam-Fittings.
Designs and Estimates furnished on application.



The FRED J. MEYERS MANUF'G CO.,

Manufacturers of

Wrought-Iron Fences,



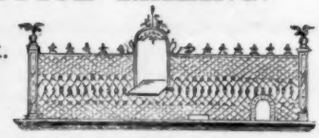
Roof Cresting, Jails, and all kinds of Building Iron-Work.

ALSO WIRE BANK AND OFFICE RAILING.

Wire Window-Guards,

AND EVERY DESCRIPTION OF WIRE-WORK.

Send for Illustrated Catalogue, No. 33.



Office and Works, 419, 421 & 423 Madison Street, Covington, Ky.

UNION FOUNDRY,

AND PULLMAN CAR-WHEEL WORKS.

Architectural Iron-Work a Specialty.

Dealers in Beams, Channels, Angles, and Shapes, both Iron and Steel. Correspondence solicited and prices given on all classes of Iron-Work.

Established 1852. Office, 164 Dearborn St.,
N. S. BOUTON, Pres't., CHICAGO.

Passaic Rolling Mill Co.

PATERSON, N. J.

SOLID ROLLED BEAMS,

Channels, Angles, Tees and Merchant Iron.

New York Office, Room 45, Astor House.

SAMUEL J. CRESWELL,

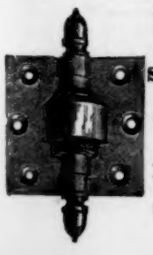
IRON WORKS,

Twenty-third and Cherry Streets,

PHILADELPHIA, PENN.

Fronts for Buildings, Columns, Girders, Wrought-Iron Beams, Sidewalk Lights, Drinking-Fountains, Garden Vases, Stairs, Crestings, Stable Fixtures, Lamp-Posts, Railings

---



Union Spring Hinges

ARE

SIMPLE, EASILY SET,

CANNOT BE PUT ON WRONG.

They work either way, right or left. All sizes. Single or double acting.

For Wire Screens or Light Doors, they have no equal.

Send for Price List.
M. W. ROBINSON. Sole Agent,
79 Chambers St., New York

THE SNEAD & CO.

IRON WORKS,

Louisville, Ky.

Manufacturers of every description of

Structural and Ornamental Iron Work.

Iron Buildings,	Store Fronts,
Iron Roofs,	Riveted Girders,
Jail-Work,	Bank-Vaults,
Columns,	Stairways,
Railings,	Gates,
Verandas,	Crestings,
Skylights,	Sash-weights,
Air-Grates,	Bolts,
Sidewalk-lights,	Blacksmithing.

Contracts taken in any part of the country.

NORTHROP'S

PATENT PANELED IRON CEILING.

DURABLE, HANDSOME AND FIRE-PROOF.
Will not stain or crack off as plaster, or warp and burn as wood.

NORTHROP'S PAT. CAP-SEAM IRON ROOFING.
Over 3,500,000 square feet used in the past ten years. Suitable for all classes of buildings.
Is never out of repair. Address,
A. NORTHROP & CO., 97 1ST AVE., PITTSBURGH, PA.

J. G. & T. DIMOND,

Architectural Iron - Works.

ESTABLISHED 1852.

209 & 211 West 33d St., New York.

IRON

BUILDINGS,
ROOFS, FRONTS,
BEAMS, GIRDERS,
STAIRS, COLUMNS,
RAILINGS, etc., etc.

Special attention given to ornamental Wrought-Iron Work.

THE

PHŒNIX IRON COMPANY,

410 Walnut St., Philadelphia, Pa.

Manufacture Rolled Beams, Channels Angles, Tee, Shape and Bar Iron of all sizes.

Roof Trusses, Girders, and Joists for fire-proof buildings framed and fitted as per plans.

PHŒNIX Wrought-Iron Columns of all sizes.

Die-forged Weldless Eyebars a specialty Designs and estimates furnished.

Boston Agents, FRED. A. HOUDLETTE & Co., 272 Franklin Street.

New York Agents, MILLIKEN & SMITH, 95 Liberty Street.

CHENEY & HEWLETT,

Architectural Iron Works.

Wrought and Cast Iron Work for Building Purposes.

N. CHENEY. C. HEWLETT. } OFFICE: { 201 BROADWAY, New York.

Works: Greenport, L. I.

WALLIS IRON WORKS.

Manufacturers of the

PERKINS PATENT

Fire-Proof Double Iron Shutters & Doors

For Stores and Warehouses.

Tested and recommended by underwriters throughout the United States. Catalogue with reports of tests mailed on application.

7 to 11 Morris St., Jersey City, N. J.

Rolled and Drawn Steel Grate Bars, in 30 Feet Lengths.

Ornamental Iron Works.

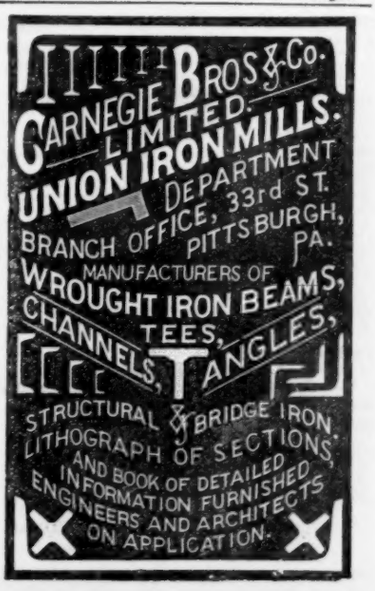
MANLY & COOPER MANUF'G CO.

ELM AVENUE AND 42d STS.,
PHILADELPHIA.

BRIDGE RAILINGS
JAIL AND BANK WORK
GRILLS, ANDIRONS
SHUTTERS, DOORS, &C.

Railings, Gates, &c. for Residences and Public Institutions.

Special facilities for the manufacture of FORGED *and* PLANED *Wrought Iron Work for Interior Decorations.* Send for Catalogue.



NATIONAL
Fine Art Foundry,
218 East 25th Street, New York.
ARTISTIC BRONZE DECORATION
for Buildings, Monuments, and Altars.
Architects' Designs executed, and designs furnished for special subjects.
Artistic Monuments in Granite and Bronze.

JOSEPH NEUMANN,
N. W. Cor. Eleventh & Race Sts.,
PHILADELPHIA, PA.
MANUFACTURER OF
Art * Metal Work
Bronze Grilles for Front Doors.
Window Railings.
Ornamental Lanterns.
Brass Railings for Banks.
Brass Lamps for Churches.
Brass Work for Church Altars.
Metal Signs.
Correspondence Solicited. Estimates Cheerfully Furnished.

SETH THOMAS CLOCK CO.,
THOMASTON, CONN.,
20 MURRAY ST., NEW YORK.
TOWER CLOCKS.
SEND FOR CATALOGUE.

THE E. HOWARD
WATCH AND CLOCK COMPANY.
CLOCKS
OF ALL KINDS.
TOWER CLOCKS A SPECIALTY.
114 Tremont St., Boston. 2 Malden Lane, New York.

GARDNER'S
Home-Architecture Series.
A group of three practical little books, pleasantly written, and copiously illustrated, and indicating simple and sensible methods for beautifying and enriching the home. It is John Ruskin and William Morris translated into the vernacular of New England, and preaching the gospel of domestic sweetness and household beauty in the valley of the Connecticut.

Homes, and How to Make Them;
or, Hints on Location and Building a House. In letters between an Architect and a Family Man seeking a Home. 30 Illustrations. 1 vol. Square 12mo. $1.50.

Home Interiors.
Illustrated with 62 Plates designed by the Author. 1 vol. Square 12mo. $1.50.

Illustrated Homes.
Illustrated with 51 Plates designed by the Author. Square 12mo. $1.50
"There is hardly a matter connected with the work of building a 'home' which is not treated of wisely and well, from the choice of a site, or the adaptation of a building to a site, through all the stages from the drains and foundation-walls to the modest completed building,—strong, but beautiful; tasteful, but not merely ornamental; a little earthly paradise, but yet not too grand for every-day enjoyment or use."—*Christian Intelligencer.*

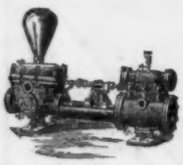
Art-Foliage.
By J. K. Colling. Entirely new Plates, from the latest enlarged London edition. Cloth. Folio. $10.00.

PUBLISHED BY
JAMES R. OSGOOD & CO.,
211 Tremont Street, Boston, Mass.

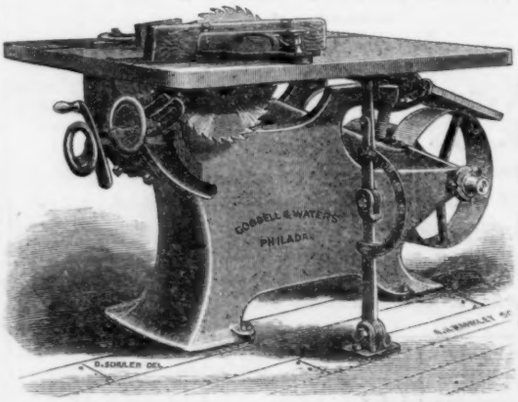
McSHANE BELL FOUNDRY

Manufacture those celebrated Bells and Chimes for Churches, Tower Clocks, &c., &c. Prices and Catalogues sent free.
Address
H. McSHANE and CO.,
Baltimore, - - - Md.

BUCKEYE BELL FOUNDRY.
Bells of Pure Copper and Tin for Churches, Schools, Fire Alarms, Farms, etc. FULLY WARRANTED. Catalogue sent Free.
VANDUZEN & TIFT, Cincinnati, O.

GEO. F. BLAKE MANUFACTURING CO.
Makers of Steam and Power Pumping Machinery

For Public and Private Buildings
and Manufacturing Establishments.
For New Illustrated Catalogue, Address
44 Washington Street, BOSTON.
95 and 97 Liberty Street, NEW YORK.

CYPRESS LUMBER
Of all Descriptions.
Dimension Shingles of Cypress.
Enquiries from Architects and Builders solicited
The A. T. STEARNS LUMBER CO.,
BOSTON, MASS.

WOOD WORKING
MACHINERY.


FOR
CAR BUILDERS,
PLANING MILLS,
RAILROAD SHOPS,
CABINET, CARRIAGE,
SASH, DOOR, AND
BLIND MAKERS.
Send for Circulars.
GOODELL & WATERS, 31st and Chestnut Sts.

Sanitary Supplies.
The Zane Patent Sanitary Water-Closet.

Self-closing and compression Safety Basin-Cocks, for hot and cold water.
The attention of the public is called to our new water-closet, which is the most perfectly constructed, SIMPLEST and BEST ever made. The combination of the FLUSH-TANK and BASIN in one apparatus, ensures a large supply of water to thoroughly flush the soil-pipe and drain every time the closet is used. One of the reliable SELF-CLOSING BALL-COCKS regulates the supply of water. It is partly self-ventilating, but can be connected with a hot flue so as to make the ventilation of the closet perfect. The closet is constructed in such a manner that it can be used either with or without a trap, and can be used in place of old-style closets without altering the pipes or seat. The closet will work equally as well with either street or tank pressure, and no matter how light the pressure is the valve does not close until the bowl is filled with water.
All goods of our manufacture are stamped with our name, and are **Warranted** in every respect.

Self-closing and Compression Safety-Bibbs for hot and cold water.

Self-closing and adjustable Ball Cock. Sure Pop.
Can be seen in operation at our Store, and also at Messrs. FRED. ADEE & CO.'S, our Agents, 52 Cliff St., New York.
JOSEPH ZANE & CO.,
81 Sudbury St., Boston, Mass.

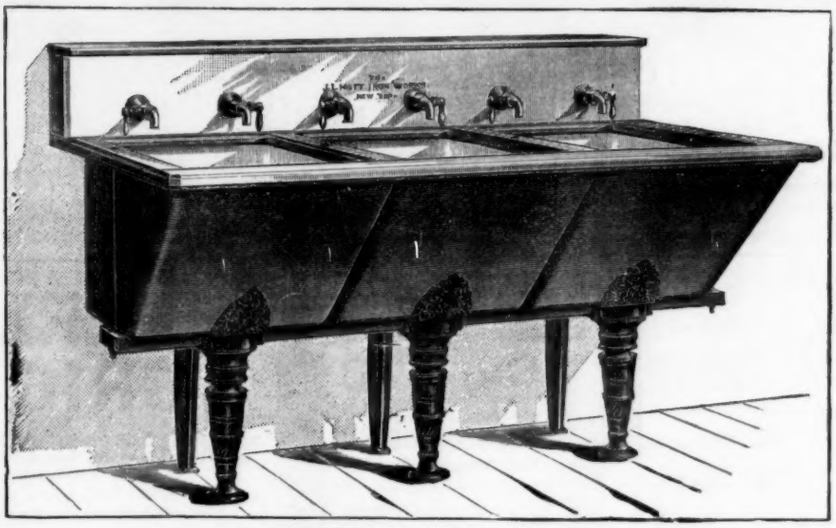
Sanitary Supplies.

THE J. L. MOTT IRON WORKS,

88 and 90 BEEKMAN STREET, NEW YORK.

SOLE IMPORTERS OF

Imperial Porcelain Baths, Wash-Tubs, Sinks, etc.



"IMPERIAL" WASH-TUBS.—No Covers.

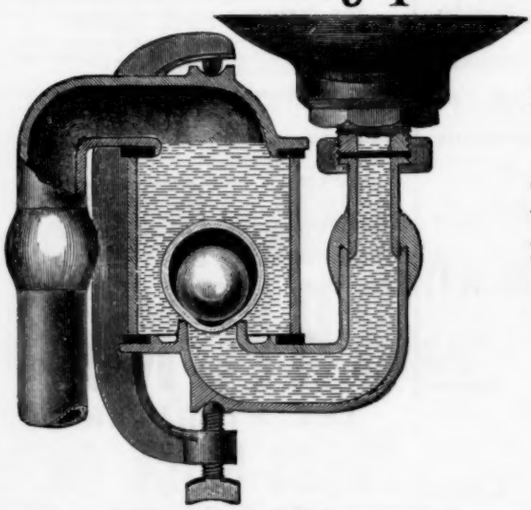
The above illustration shows the "Imperial" Porcelain Wash-Tubs set up without covers, and with Faucets over top, which is now considered the most approved style of fitting up these Tubs, as it not only gives more room inside, but admits of a much better arrangement of the supply-pipes, getting them over the Tubs, instead of behind, where they can be readily got at in case of leak or necessary repairs. A sliding cover can also be made for Tubs put up in above manner if desired, although we should very much prefer them just as shown, *i. e.* showing the beautiful clean porcelain surface.

In calling the attention of Architects, Plumbers and others to these Tubs, it is probably enough to say that they are in material and finish in all respects the same as our "Imperial" Porcelain Bath-Tubs, being perfectly modelled, delicate and uniform in color, with a glaze which is simply perfect and unapproached by anything of the kind yet made. They should be seen by all who are in the market for such goods, before specifying or purchasing any other kind.

COMPLETE ILLUSTRATED CIRCULARS WITH PRICES ON APPLICATION.

All our Sanitary Specialties are fitted up with water attached and may be seen at our Warerooms, 88 and 90 Beekman Street.

Bennor Syphon Trap.



Absolute seal under all Circumstances.

Self Cleansing.

Bath-Tub Traps on same principle with cap above floor.

COOPER, JONES & CADBURY,

PHILADELPHIA.

Send for Price-List.

POWELL'S PATENT "STAR"

Bath, Basin, Sink & Tray Plugs With Rubber Stoppers.

Manuf'd by WM. POWELL & Co. 72 and 74 E. H. STREET, CINCINNATI, OHIO.

No more denting of Copper Bath Tubs, no cracking or breaking of earthenware Basins, with the use of these Rubber Plugs. Plumbers all prefer them; architects specify them generally. Sold by plumbers everywhere.

The Kelly Stop & Waste Cock

to prevent Water-pipes from freezing, and control the water-supply from any point in a building, or as a Self-closing Hopper Cock, or Self-acting Flushing Apparatus for Water-Closets or Urinals.

Send for Catalogue.

THOS. KELLY & BROS, Plumbers,

75 Jackson St., Chicago, Ill.

N. Y. Depot: RENTON BROS., 105 East Ninth St.

THE BOWER SEWER-GAS TRAP.

A positive valve Seal; a sound waterseal. Simple, cheap, effective and durable.

With or without the Valve, it is the best WATER SEAL TRAP in the market. There is no other Trap so sure of retaining its WATER SEAL. None that approximates in it the surety of the VALVE SEAL. The Valve keeps its seat by flotation, and as compared with other Valves in Traps, is little or no resistance to the outflow of water or waste. *Illustrative and descriptive 48-page pamphlet sent free on application.*

B. P. BOWER & CO.

Manufacturers,

CLEVELAND, O.

The Sanitary News.

HEALTHY HOMES AND HEALTHY LIVING.

A Semi-Monthly Journal of Sanitar Science.

Office of Publication:
113 ADAMS STREET,
CHICAGO, ILL.

European Office:
50 FINSBURY SQUARE,
LONDON, E. C.

Yearly Subscription Rates: *strictly in advance.*
In the United States and Canada, . $2.00
In Foreign Countries, ... 3.00

Advertising: $2.00 an inch.

Architects, Builders, and others will confer a favor on the Publishers by mentioning "The American Architect and Building News" when sending for circulars or corresponding with parties advertising in these columns.

Masons' Supplies.

AKRON SEWER PIPE CO., AKRON, OHIO.

MANUFACTURERS OF

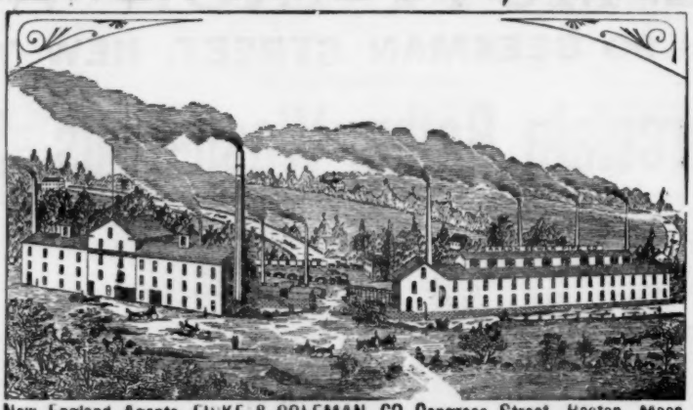
STANDARD

Akron Salt-Glazed

SEWER PIPE

The superior quality of the pipe manufactured by this Company have given national reputation to Akron Sewer Pipe, which has been acquired solely by this Company's efforts to make the best article offered to the public. Be sure to order the Standard to secure the pipe which has made the reputation

Agencies for the sale of our Akron Pipe in all the Principal Cities of the United States.



New England Agents, FISKE & COLEMAN, 62 Congress Street, Boston, Mass.

For further information address F. W. ROCKWELL, Secretary, Akron, Ohio.

"The Best is the Cheapest"

For quality we refer by permission to the following eminent Civil Engineers

Mr. E. S. CHESBROUGH, *City Engineer, Chicago,*

Mr. J. W. ADAMS, *Sanitary Eng'r, Brooklyn, N. Y*

Mr. J. HERBERT SHEDD, *Late Chief Eng'r Providence Water Works, Providence, R. I.*

Col. GEO. E. WARING, JR. *Newport, R.*

Mr. W. H. BRADLEY, *Sup't Sewers, Boston, Mass.*

Mess. W. S. & ALF'D EGERTON, *Engineers in Charge of Parks, Albany, N. Y.*

Mr. W. W. WILSON, *Chief Engineer and Superintendent Yonkers Water Works, Yonkers, N. Y.*

Building Stones.

THOMLINSON & REED,
Quarrymen, and Dealers in

OOLITIC LIMESTONE

Quarries at Avoca, near Bedford, Ind.,
Branch Office:
Cor. Polk and Ellsworth Sts., Chicago.

Dorchester, (New Brunswick.) Yellow.
FREESTONE.
Corsehill, (Scotch.) Red.
FREESTONE.
G. P. SHERWOOD, 24 Pine St., New York.

MALONE & CO.,

Proprietors of the

Malone Blue-Stone Quarries,

Miners and Manufacturers of
SAWED AND BLOCK STONE.
Platforms up to thirty feet in length, for sidewalks, a specialty. CLEVELAND, OHIO.

BEDFORD OOLITIC LIMESTONE,

Buff and Blue.

HALLOWELL GRANITE CO.,
Quarrymen and Dealers in

Building, Sawed, and Rough

DIMENSION STONE.

P. O. Address - - - Bedford Ind.

Clark's Island Granite Quarries

OF ROCKLAND, ME.

Estimates given for **Building Dimensions** and **Monumental Work in Granite**, with extra facilities for dispatch and beauty of finish.

M. H. St. JOHN,
Owner and Proprietor.
Office: 83 and 84 Astor House, New York.

MEXICAN ONYX.

C. CARRANZA & CO.,
60 WALL ST., NEW YORK.
Sole Agents for the Quarrying Co.,
"LA SORPRESA," of Tehuacan.

WALPOLE MORTAR BLACK.

THE ORIGINAL.

The best in use and the only one that has stood the test of time. It improves the mortar, and is cheaper and better than Lampblack. Beware of imitations and use only the "Walpole."

HENRY D. DUPEE, Proprietor,
44 to 46 Oliver Street, Boston,
PROVIDENCE, R. I. Manchester & Hudson, Agents.
NEW YORK. Candie & Smith, foot E. 26th St. Ag'ts.

Old Masters

OF BELGIUM AND HOLLAND. Translated by MRS. MARY E. ROBBINS, from the French of EUGENE FROMENTIN. 1 vol. 8vo. With 12 full-page Heliotypes. $3.

The Boston *Courier* says; "It is difficult adequately to convey a sense of the charm of this book."

The N. Y. *Star* says that "it lets the reader into the real life of the artists, into their surroundings, and even into their feelings."

CHICAGO ANDERSON PRESSED BRICK CO.

157 Lasalle Street,
CHICAGO, ILL.

FRONT & ORNAMENTAL
Pressed Brick.

Best Brands of English and Continental

Portland Cements.

K. B. & S. English, Lafarge French,
Burham English, Lime of Teil,
Fewer German, Keene's Fine,
Jossan Antwerp, Keene's Coarse.

IMPORTED BY
JAMES BRAND, 85 BEEKMAN ST.,
NEW YORK.

GABRIEL & SCHALL,

205 Pearl Street, New York,
SOLE IMPORTERS OF
VORWOHLER ASPHALT MASTIC
OF BRUNSWICK (GERMANY).
VORWOHLER PORTLAND CEMENT, OF HOLZMINDEN (GERMANY).
IMPERIAL MORTAR AND CEMENT BLACK.

SINCLAIR & BABSON,

IMPORTERS OF

PORTLAND CEMENT,

105 John St., New York.
Brands, O. F. ALSEN & SONS, and K. B. & S.
Send for Practical Treatise on Cement.

STANDARD CEMENT CO.,

Manufacturers of

Hydraulic Cement
And Hydraulic Lime.

E. G. WESTCOTT, Gen. Eastern Agt., Hartford, Ct.
Works at
Akron, N. Y. St. Louis, Mo. Mankato, Minn.

TERRA-COTTA

CHIMNEY TOPS,

PHILADELPHIA AND PEERLESS (MOULDED) BRICK,

Akron Drain-Pipe. Portland, Roman, and Rosendale Cements. Hearth Tiles & Chimney Flue Lining.

WALDO BROS.,
88 Water Street, BOSTON

PEERLESS BRICKS.

THE PEERLESS BRICK COMPANY

OF PHILADELPHIA,
MANUFACTURES AND KEEPS IN STOCK
ARCHITECTURAL SHAPES, 300 KINDS.
ALSO

RED Pressed Fronts.
Extra fine in color and quality.

BUFF, Solid rich color,— beautiful.
One of the finest bricks made.

DRAB, Handsomer and more durable than stone.

BROWN, Very strong and superior to brown stone.

GRAY, A very desirable shade.

BLACK, Velvety jet face.
The only black brick fit for a fine building, producing a beautiful effect, and free from the glossy and greasy look of other black or dipped bricks.

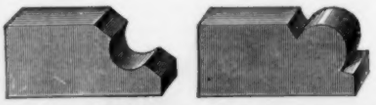
DIAPERING and ORNAMENTAL
Bricks made in the above colors.

OFFICE:
1003 WALNUT STREET, Philadelphia.
SAMUEL HART, PRESIDENT. JOSEPH WOOD, JR., TREASURER.

THE PEERLESS BRICK COMPANY

Wish to inform Architects and Dealers that no one is authorized to act as Agent for the sale of our manufactures.

Illustrated Catalogue and Price-List sent free on application.



BRICKS!

THE HYDRAULIC PRESS BRICK CO.

ST LOUIS, MO.

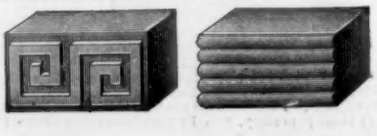
Make a Specialty of Ornamental & Plain

Red Front Pressed Brick,

Manufacturing Annually over

TEN MILLIONS.

They guarantee that the **quality, finish** and **Color,** are **unsurpassed, if not unequalled** by any other bricks made in the United States.



Fire-proof Building.

THE WIGHT FIRE-PROOFING COMPANY,

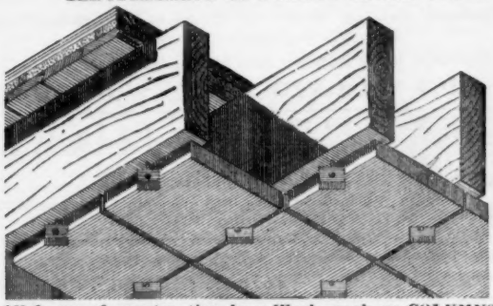
202 La Salle St., CHICAGO, **60 William St., NEW YORK.**

CONTRACTORS FOR ALL KINDS OF FIRE-PROOF WORK IN

Porous Terra-Cotta and Hollow Fire-Clay Tiles

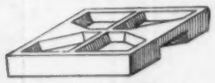
IN ALL PARTS OF THE UNITED STATES.

ILLUSTRATION OF POROUS TERRA-COTTA FIRE-PROOF CEILING.



500000 feet of this ceiling have been put up in Chicago, Milwaukee and Cleveland, and it is now being put in the American Bank-Note building, New York.

Patented April 16, 1878, and March 6, 1883.



Top of Ceiling Tile.

Bottom of Ceiling Tile.

All forms of constructive Iron-Work, such as COLUMNS, GIRDERS, and ROOF TRUSSES covered with POROUS TERRA-COTTA and left ready for plastering. Partitions, Furring and Roofing Furnished and Set.

FIRE-PROOF BUILDING MATERIALS.

Raritan Hollow and Porous Brick Company,

Manufacturers of Hollow Burnt-Clay Bricks and Porous Terra-Cotta Bricks,

For Floors, Ceilings, Partitions, Furring, Roof-Lining, Column Fire-Proofing, etc.

Office: 115 BROADWAY, New York. Factory, Raritan River, near Perth Amboy, N. J.

EDWARD KEASBEY, Pres't. J. C. ROSSI, Sup't. H. M. KEASBEY, Sec. and Treas.

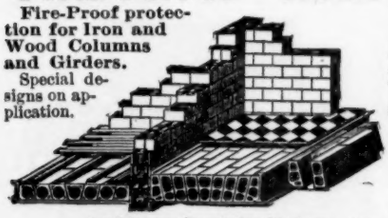
Boston Agents: FISKE & COLEMAN, 62 Congress Street.

Estimates Furnished. Builders Supplied. Send for Illustrated Catalogue.

GEO. M. MOULTON, Pres't. A. T. GRIFFIN, Vice Pres't. E. V. JOHNSON, Sec'y., Treas. and Gen'l. Man'g'r.

FIRE-PROOF HOLLOW BUILDING TILE

Fire-Proof protection for Iron and Wood Columns and Girders. Special designs on application.



FOR THE INTERIOR

CONSTRUCTION OF BUILDINGS,

Great strength, combined with saving in space, and weight, is obtained by the use of our system of

Hollow Tile Floors, Partition Walls, Roofs, Ceilings, Etc.

Contracts taken for the erection of HOLLOW, SOLID and POROUS TILE-WORK in any part of the United States.

PIONEER FIRE-PROOF CONSTRUCTION CO.,

1545 CLARK STREET, CHICAGO.

Formerly THE OTTAWA TILE CO.,

MANUFACTURERS AND CONTRACTORS,

Dealers in every description of constructive Tile for Building Purposes.

Send for our descriptive Catalogue, giving full explanations, advantages, references, etc.

LEONARD F. BECKWITH, Pres't. & Treas. ARTHUR BECKWITH, Sup't. CHARLES E. STREAT, Sec'y.

Established 1873.

THE FIRE-PROOF BUILDING COMPANY,

NEW YORK.

MANUFACTURERS OF FIRE-PROOF BUILDING MATERIALS.

Porous Terra-Cotta Blocks, Hollow Burnt-Clay Bricks and Tell Lime Composition Blocks.

For Arches, Partitions, Furring, Deafening, Roofing, etc.

BUILDERS SUPPLIED.

Office, 229 BROADWAY, (Rooms 12, 13 and 14,) NEW YORK, N. Y.

ESTABLISHED 1856.

HENRY MAURER, Manufacturer of

Fire-Proof Material

Of every description. Hollow Brick made of Clay for Flat Arches, Partitions, Furring, etc. Porous Terra-Cotta, Fire-Brick, etc., etc.

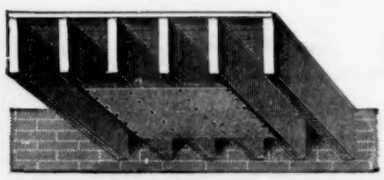
Works, PERTH AMBOY, N. J. **Office and Depot, 420 EAST 23d STREET, New York.**

LYONS' PATENT FIRE-PROOF

BUILDING MATERIAL,

FRANK LYONS, JR., Sole Manufacturer.

Office Room 60, Drexel Building, Cor. Wall and Broad Sts. Works, Nos. 57 to 65 Clason Ave., Brooklyn. New York Telephone, New 387. Brooklyn Telephone, Williamsburg, 391. Mechanics and Traders' Exchange, No. 14 Vesey St. (Box 82).



The above cut shows the method of applying the sheets of fire-proof material to floor timbers, furrings, etc.

FIRE-PROOF.

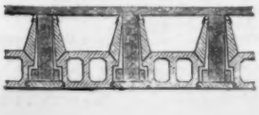
MAGNESO CALCITE FIRE-PROOF CO.,

BOSTON, MASS.

Manufacturers of Fire-Proof Material for the protection of buildings. Indorsed by the leading Architects of Boston.

Send for testimonials of actual fire tests. Every information given by application to the principal office.

64 SUDBURY STREET, BOSTON.



FIRE-PROOF FOR WOODEN BEAMS.

Patented August 8, 1882.

Fire-Proof Tiles for Arches, Partitions, and Furring. Also, Tiles for Protecting Wooden Floor Beams against Fire.

Artificial Stone and Rock Asphalt pavements.

JOHN J. SCHILLINGER, 420 East 92d Street, NEW YORK.

Terra-Cotta.

Illustrated Catalogue of 100 pages sent to

ARCHITECTS, BUILDERS and OWNERS,

upon application accompanied by business card

INDIANAPOLIS

TERRA-COTTA CO.

INDIANAPOLIS, IND.

Manufacturers of

Architectural Terra-Cotta.

Send for estimates.

BALTIMORE

TERRA-COTTA CO.

Office: 30 Columbia St., Baltimore, Md.

MANUFACTURERS OF

ARCHITECTURAL TERRA-COTTA

MOULDED AND PRESSED BRICK.

PERTH AMBOY

TERRA-COTTA CO.

Nos. 80 and 81 Astor House, New York.

MANUFACTURERS OF

ARCHITECTURAL TERRA-COTTA.

BUFF AND COLORED BRICK, FIRE BRICK.

A. HALL

TERRA-COTTA CO.

Architectural Terra-Cotta, Fire-Brick, Furnace-Blocks, &c.

MOULDED, BUFF, AND COLORED BUILDING BRICK.

Perth Amboy, N. J.

Northwestern Terra-Cotta Works.

TRUE, BRUNKHORST & CO.,

ARCHITECTURAL

TERRA - COTTA.

Works: Corner Clybourn & Wrightwood Aves.

Chicago.

City Office: Room 20, McCormick Block

Formerly Cor. W. 15th and Laflin Sts.

Estimates given on application. Send for latest Catalogue, Price-List and Samples.

AUGT. T. CHUR,

Room 14, 5th story, Mills Building, N. York.

Importer of

"WILCOCK'S" Enamelled Bricks,

Impervious to any atmospheric effect, an may be used with perfect safety in the face of moisture and frost.

YOUNG O. WILSON & SON,

Manufacturers of

ARCHITECTURAL TERRA-COTTA.

Best Quality of Plain and Moulded Pressed Brick.

Office, 1 N. Paca Street. Baltimore, Md.

WATER-PROOFING

FOR WALLS

Renders brickwork permanently non-absorbent, prevents weather stains and crumbling mortar-joints; also prevents disintegration of stone without altering the appearance. Can be proved reliable. State-rights for sale under the patent. For ful particulars apply to

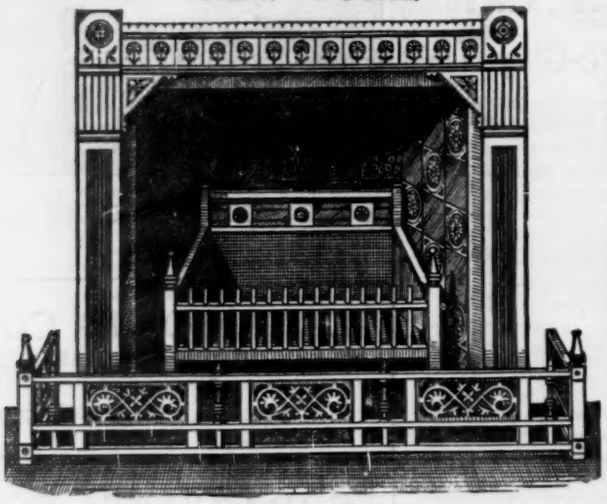
THEODORE HUNT, 413 North 12th St., St. Louis, Mo.

WM. H. JACKSON & CO.

(NO CONNECTION WITH ANY OTHER ESTABLISHMENT).

Union Sq., 2d Door from Broadway, (17th St. side)

NEW YORK.



Manufacturers of Artistic Grates and Fenders in Brass, Real Bronze, Steel and Tile

HAVE NO OTHER WAREROOMS

PARQUET FLOORS.

The National Wood Manufacturing Co.,

16 East 18th St., New York City.

Manufacturers of

INLAID WOOD FLOORS, 5-16 and 7-8 inch thick.

Designs and estimates on application. Established 1867.

PRIZE MEDALLISTS.

Exhibitions of 1862, 1865, 1867, 1872, 1873, and only Award and Medal for Noiseless, Self-Coiling Steel Shutters at Philadelphia, 1876; Paris, 1878; and Melbourne, 1881.

CLARK, BUNNETT & CO. (Limited)

Late CLARK & COMPANY,

Original Inventors and Sole Patentees of Noiseless

Self-Coiling, Revolving STEEL SHUTTERS Fire & Burglar Proof.

Also, *Improved Rolling Wood Shutters,* and *Clark's Patent Metallic Venetian Blinds.*

The BEST in the Market. Send for Catalogues, etc., to

162 and 164 West 27th St. - - New York.

PARQUET FLOORS.

WM. HANNAM & CO.

7-8 inch tongued and grooved, European Styles, Solid and Substantial. Also 5-16 inch Fancy Wood Carpet Floors.

297 Fifth Avenue, NEW YORK.

Formerly 31 East 17th Street.

"YALE" LOCKS.

FOR ALL PURPOSES. Catalogues on application.

ADDRESS:

The YALE & TOWNE MANUFACTURING CO., STAMFORD, CONN.

62 Reade St., New York. | 15 N. Sixth St., Philadelphia.

224 Franklin St., Boston. | 64 Lake St., Chicago.

N.J. STEEL & IRON CO.

TRENTON, N.J.

ROLLED IRON BEAMS

CHANNELS, ANGLES & TEES.

COOPER, HEWITT & CO.

NEW YORK.

AMERICAN AND GEM

SPRING HINGES.

Bronze, Brass & Iron,

In Various Styles, and SUPERIOR Finish.

Send for Catalogue.

VAN WAGONER & WILLIAMS CO.,

82 Beekman St., N. Y.

Moule's Earth-Closet.

MYERS All China Water-Closet In one piece with Trap combined.

DECECO Siphon Water-Closet and large Stock PLUMBERS' SUPPLIES.

MYERS SANITARY DEPOT,

94 Beekman St., New York.

[Established 1865.]

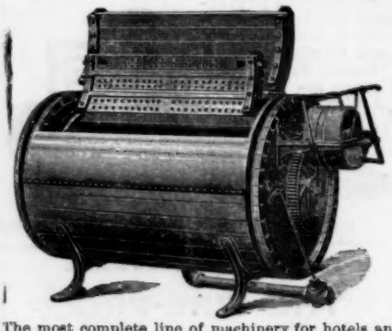
Scenery for Theatres, Public Halls and Amateurs.

Lafayette W. Seavey, 8 Lafayette Place. N. Y.

Troy Laundry Machinery Co.,

LIMITED. TROY, N. Y.

Salesrooms: New York and Chicago.



The most complete line of machinery for hotels and Public Institutions. Complete laundries for Institutions our specialty.

Estimates furnished. Send for Illustrated Catalogue.

ROOF CRESTING,

Iron Fence, Railings, Stable-Fittings,

BUILDERS' SPECIALTIES, Etc.

J. E. BOLLES & CO.,

Detroit, Mich., U. S. A.

Send for Catalogue. Mention this Paper.

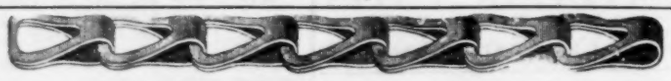
CONTINENTAL (FIRE) INSURANCE COMPANY,

100 Broadway, New York.

Reserve for re-insurance (Fire Risks)	$1,750,137.81
Reserve for re-insurance (Inland Risks)	25,682.88
Reserve ample for all other claims.	430,324.04
Capital paid in in Cash	1,000,000.00
Net Surplus	1,661,797.28
Total Cash Assets Jan. 1, 1884	$4,867,942.01

CYRUS PECK, Secretary, GEORGE T. HOPE, President.

Agencies throughout the United States.



"Giant Metal Sash Chain."

MADE ONLY BY

THE SMITH & EGGE MANUFACTURING CO.,

BRIDGEPORT, CONN.

The most reliable and economical article in the market for the purpose. GREAT TENSILE STRENGTH Does not corrode; does not lose its vitality by continuous use, or exposure to the elements; runs over any pulley, and gives satisfaction wherever it is used. Fixtures made of steel wire, is very simple and easily applied. Prices very low. Samples sent to any architect in the United States, free, on application. Now in use in State House, Hartford; Providence City Hall; Singer Building, Chicago; J. C. Flood's, Menlo Park, Cal.; Vanderbilt and Florence Flats, New York; Boreel Building, New York; new State War and Navy Departments, and Patent Office, Washington, D. C.; *Herald* Building, Boston, and very many other fine buildings in all parts of the United States

T. WILLIAM HARRIS,

Civil Engineer and Surveyor.

Attention given to any engineering or surveying work. **Special Attention** given to any work required by Architects, such as staking out lots, setting batters for buildings, giving lines and grades for buildings, streets, drives, and drains. Excavation and filling measured.

No. 63 Court Street, Room A,

Cor. Cornhill & Court Sts.

SAYLOR'S PORTLAND CEMENT.

Strongest, Cheapest, Best, and Always Fresh.

JOHNSON & WILSON, Gen. Agts.,

For Sale by all dealers in masons' materials. **91 Liberty Street, New York.**

Sole Agents for **Styrian Tool Steel,** for the United States and Canada.

Send for New Descriptive Pamphlet.

ARTISTIC GRATES AND FENDERS.

OPEN FIREPLACES.

Direct Importers and Dealers in

Foreign and Domestic Tile

of every description and make, including new and original designs solely our own.

Fire Irons, Andirons, Brass Plaques, Jardinieres, &c.

The largest assortment and most elegant show-rooms in America.

J. S. CONOVER & CO.,

30 West 23d Street, - New York.